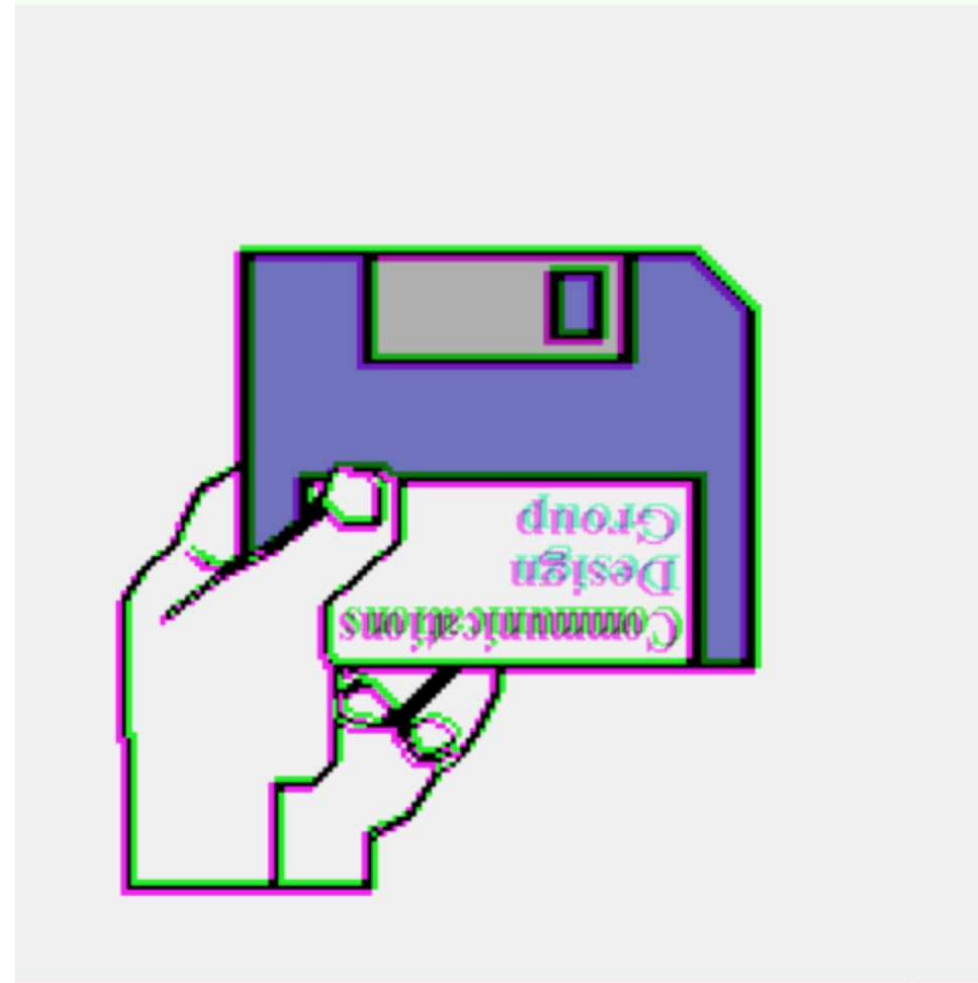


2015-04-22

COMMUNICATIONS DESIGN GROUP | ALL HANDS MEETING



MINIMALIST SCHEDULE
for All-Hands Meeting (draft 6)

Wednesday

5 Invited Talk (Larry Y)
7 Dinner

Thursday

8 Continental Breakfast
9 Opening Remarks and Introductions
10 Hands-on activity (uke's w/Vi H)
11 Informal Time
12 Lunch
2 Invited Talk (Shawn D)
3 Informal Time
5 Dinner
6 Travel to Alan's House
7 Concert

Friday

8 Continental Breakfast
9 Invited Talk (Ken P)
10 Hands-on activity (Makey Makey w/Eric R)
11 Informal Time
12 Lunch
1 Invited Talk (David S)
2 Informal Time
3 Final Gathering
4 Departures
6 Self-organizing dinners in Westwood

Saturday morning

Self-organizingn breakfast

—

zhixuan l

undergrad @ UCLA interested in client-side apps & programming language.

BACKGROUND - i have played w/many client-side techs

- last spring i spent a lot of time w/Unity3d game engine. it enabled me to make mobile multiplayer games using AR and VR tech (Vuforia & Oculus Rift) --two of which actually won me hackathon prizes
- last summer i co-founded a startup & got accepted into StartupUCLA summer accelerator, a 10wk program during which my cofounders&i developed 2 apps i open-sourced some of the UI components & received great feedbacks.
- most recently, started making websites declaratively w/React.js and it feels great!

CDG - i have been an intern since Spring '15 working w/Alex

PRINTF VISUALIZER - i have used many embedded D.S.L.s (e.g., Printf format string & Apple's Visual Format Language). They are expressive but difficult to learn & work w/(limited help from coding env). So based on Patrick's Ohm viz, I made a printf viz. It visualizes a parse tree from the code & displays documentation for the rule being moused over. It also allows you to see the result for arbitrary input. If you cannot tell the result of

```
printf("%0+10.3f", 1.8);  
XXXX  
you should use printf visualizer.
```

PROLOG VISUALIZER - totally awesome tool that provides step-by-step viz of prolog search tree. Alex W & I tried to make it the best way to learn prolog & it will be battle tested in UCLA CS131 class next week.

-

alan b

My CDG work has been in the area of PROGRAMMING LANGUAGE DESIGN in particular, constraint and Other languages... how to reconcile these with state & change & --sometimes-- traditional imperative programming.

My vision ~~XXXX~~ for this work is to make languages that are elegant, satisfying to use, & higher level. The main project this past year is on Babelsberg a framework for object constraint programming (OCP). The core tech challenge here is how to integrate constraints w/a standard OO language & encapsulation

...working out some issues which have been bugging me for decades

A related project is working on a semantics for Constraint Reactive Programming, a more radical rewrite of a programming lang that tries to cast loose from imperative roots --I think there is a way to generalize Hesam's Sketchpad14 paper to a more ~~XXXXXX~~ flexible solver framework and I want to work on that.

Finally, a smaller project has been reviving

ThingLab

my PhD dissertation project, using the JS/Lively implementation of the Smalltalk-76 interpreter. This is operational.

ABOUT me & my CDG connection: I did my dissertation @ PARC in the 70s w/Alan Kay & Terry Winograd. I've been a prof at UW since 1980. John Maloney was one of my PhD students. Around 2000, I moved towards research w/immediate application to environment and political issues (planning, civics, accessibility)

501(c) organization

an American tax-exempt nonprofit organization
501(c)(3) — Religious, Educational, Charitable, Scientific, Literary, Testing for Public Safety, to Foster National or International Amateur Sports Competition, or Prevention of Cruelty to Children or Animals Organizations

ABAP

Advanced Business Application Programming, originally Allgemeiner Berichts-Aufbereitungs-Prozessor, German for "general report creation processor"
application-specific fourth-generation languages (4GLs) first developed in the 1980s

AP Computer Science

AP Computer Science A is meant to be the equivalent of a first-semester course in computer science
The GridWorld Case Study is intended to be a substitute for writing a single large program as a culminating project. Due to obvious time restraints during the exam, the GridWorld Case Study is provided by the College Board to students prior to the exam.

APL (programming language)



a programming language developed in the 1960s by Kenneth E. Iverson
Iverson described the premise of the book in the Preface: "Applied mathematics is largely concerned with the design and analysis of explicit procedures for calculating the exact or approximate values of various functions. Such explicit procedures are called algorithms or programs. Because an effective notation for the description of programs exhibits considerable syntactic structure, it is called a programming language."
code in APL is typically structured as chains of monadic or dyadic functions and operators acting on arrays

Toward a Broadcast-based Network OS for Better Modularity and Interoperability

yoshiki o

THE IDEA - more & make more software are written by different ppl in different languages. We would like to have an easy way to connect these software pieces as components, and more importantly a programmer can make visual applications with them. In other words, we'd like to make an environment for mashup style application building.



We will build a JS binding & GUI framework. At least components written in JS will be easy to handle, & the framework allows to have a web-ready application.

BROADCAST MESSAGES - in this proposed framework, software components should communicate w/ broadcast messages, which is an analogy to the ethernet protocol, & allows more expressive protocols to be built on top of it



A programmer sets up domains in his program to group components. A component may participate in multiple domains, but each domain is guaranteed to have a unique name.
a component

A message is characterized w/string selector, X& can have serializable params. A programmer can write code to propagate some messages to other domains.

GUI APPLICATIONS - The model can be used to make a GUI application. Graphical elements shall be organized in a tree structure and each element has a broadcast domain. Even though communication is based on broadcasting, there may be two modes of execution - when all objects in a domain located on same computer, evaluation engine can take advantage & become more reliable. This should help writing a GUI framework. (it is how VAT works in E, far refs Tweak in

Virtual reality



Virtual reality (VR) or also called Immersive Multimedia is a computer-simulated environment that can simulate physical presence in places in the real world or imagined worlds

The possibility exists to have films and television programmes which are watched with a head-mounted display and computer control of the image so that the viewer appears to be inside the scene with the action going all round.

The term "artificial reality", coined by Myron Krueger, has been in use since the 1970s; however, the origin of the term "virtual reality" can be traced back to the French playwright, poet, actor, and director Antonin Artaud. In his seminal book *The Theatre and Its Double* (1938), Artaud described theatre as "la réalité virtuelle", a virtual reality in which, in Erik Davis's words, "characters, objects, and images take on the phantasmagoric force of alchemy's visionary internal dramas".

White-box testing

also known as clear box testing, glass box testing, transparent box testing, and structural testing tests internal structures or workings of an application, as opposed to its functionality (i.e. black-box testing)

Thoughts in Fleeting Moments

alan k

over the years, i've been interested in systems of many kinds, and the idea/~~the~~ aesthetics of "system" ~~itself~~ itself.

I grew up worried about adults--have tried to~~try~~ think about systems that can "produce" "improved" adults by helping children develop in better ways.

..to better shape nurture via deep understandings of nature and its normal cultural extensions.

GROUNDS FOR HOPE are based on the extent humans can learn things not specifically genetically prepped:

new "fast reactions" & esp. the qualitative nature of what can be accomplished more slowly by learning new ways to think

I've been interested in "transcendence" as a mental vehicle that helps people escape from the enormity of themselves for short periods of time:

"artistic experiences" (surprise/chills/goose-bumps discovery/laughter/weeping/"fitting"/merging/wakeup) are important happenings which give meaning to life. These ~~reach~~ emotions are "piggy-backed" on mobilizing mechanisms for top performance in danger.

e.g. one night is theater, the next a fascist ~~xxx~~ rally
"When you are in a horror movie, you ^{make} ~~make~~ bad decisions"
This~~is~~ is a good way to think abt educating ppl for in-the-moment choice.

The gap between fast & slow thinking is enormous-- e.g., the US Constitutional Convention & Marshall~~is~~ Plan.

As Vi Hart put forth, rules can be learned by fast mechanisms, but these (rules) are anti-thought.

Humans, basically, are not good at modding and x-fer- ing from one domain to ~~xx~~ others--we need more facilities for important slow thinking.

This is~~is~~ like a new kind of game, & this is like art making, new & old. We should be making envs that combine the "media environmental urges" we are having now. This could be wonderfully effective.

Abstract syntax tree

a tree representation of the abstract syntactic structure of source code written in a programming language

Andreas Raab

German computer scientist who developed new concepts and applications in 3D graphics. Raab was a key contributor to the Squeak platform and the Croquet virtual world project.

Apparatus

Technical term for body of the Soviet and post-Soviet governments (see Apparatchik)
Critical apparatus, the critical and primary source material that accompanies an edition of a text
Machine

Apple Inc.



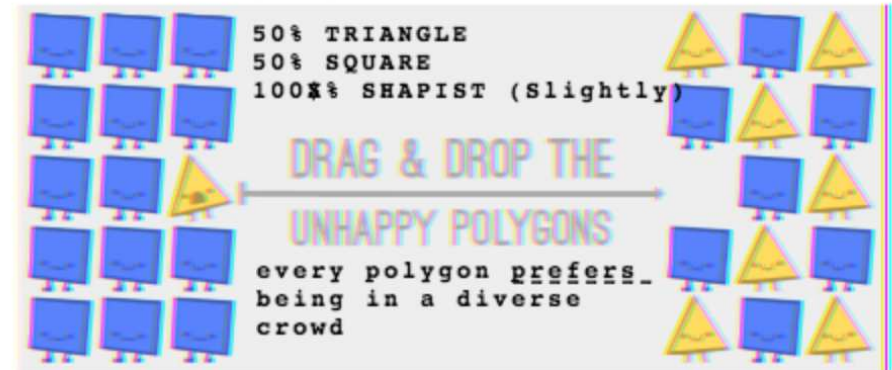
An American multinational corporation headquartered in Cupertino, California, that designs, develops, and sells consumer electronics, computer software and personal computers
Apple is the world's second-largest information technology company by revenue after Samsung Electronics
The Apple II was chosen to be the desktop platform for the first "killer app" of the business world, VisiCalc, a spreadsheet program
Jobs and several Apple employees, including Jef Raskin, visited Xerox PARC in December 1979 to see the Xerox Alto. Xerox granted Apple engineers three days of access to the PARC facilities in return for the option to buy 100,000 shares (800,000 split-adjusted shares) of Apple at the pre-IPO price of \$10 a share. Jobs was immediately convinced that all future computers would use a graphical user interface (GUI), and development of a GUI began for the Apple Lisa

parable of the polygons

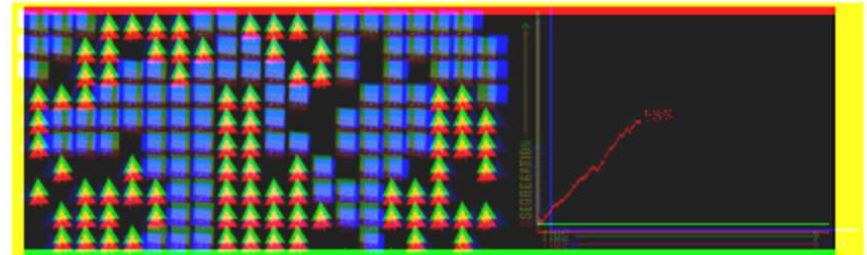
vi h

(w/nicky case)

THIS IS A STORY OF HOW HARMLESS CHOICES CAN MAKE A HARMFUL WORLD.

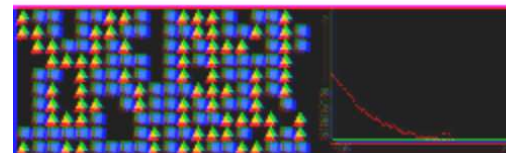


you can only move them if they're unhappy w/ their immediate neighborhood. 1 simple rule:
"i wanna move if less than 1/3 of my neighbors are like me" --harmless, right?}



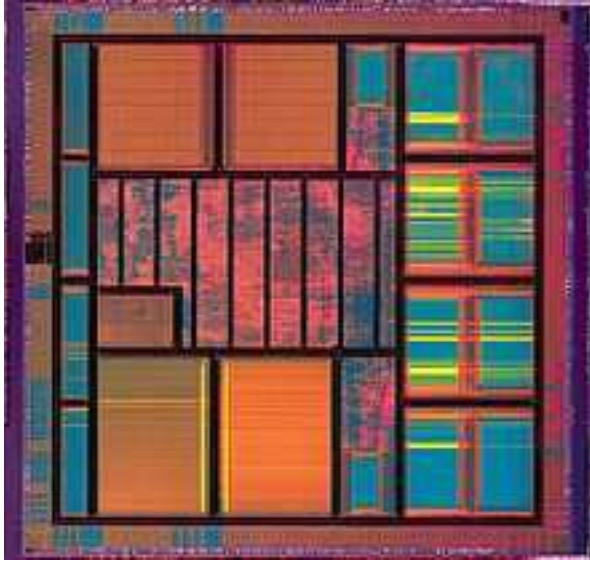
these are good shapes, nice shapes. and yet, even though the individual only has a slight bias, the entire shape society cracks and splits.

SMALL INDIVIDUAL BIAS CAN LEAD TO LARGE COLLECTIVE BIAS.



what happens when shapes demand even the smallest bit of diversity?

Very-large-scale integration



the process of creating integrated circuits by combining thousands of transistors into a single chip.

Virtual machine

a software-based emulation of a computer

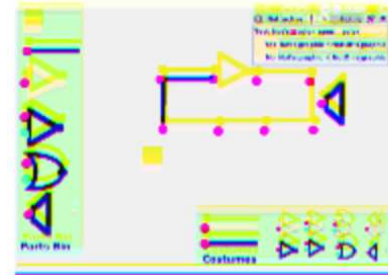
A VM was originally defined by Popek and Goldberg as "an efficient, isolated duplicate of a real machine".

alex w

10 yrs ago, as a 1st-yr PhD student @ UCLA, i enrolled in "Inventing the Future, Again" w/prof Alan Kay.

The class began with the Etoys drive-a-car demo, which blew me away. That night, i started messing around with Etoys & before i knew it i had a logic simulation going... it always

circuits



seemed like too much work in python or java. that etoys project scored me a VPRI internship & i've had the good fortune to work with Alan & his gang ever since.

- teaching "Prototyping Programming Languages" @ ucla students get to implement programming langs in several

paradigms (functional, OO, logic) using a range of prototyping techniques (naive interpreters, embedded languages, source-to-source translators. 100+ students

- teaching "Programming Language Design" new, studio-style course on PL design w/one-page design docs

- getting Ohm, a prototyping & meta-language language, ready for its first public release

- "Backtalk" - hypercard for grassroots social apps

-- starting to work on a remote collab/whiteboard system

-- interested in/passionate abt

- playing music/built looping pedal
- NOT talking abt Brazil Germany World Cup birthday surprise



Arduino



a single-board microcontroller, intended to make the application of interactive objects or environments more accessible

Arduino started in 2005 as a project for students at the Interaction Design Institute Ivrea in Ivrea, Italy. At that time program students used a "BASIC Stamp" at a cost of \$100, considered expensive for students. Massimo Banzi, one of the founders, taught at Ivrea

Artificial neural network

artificial neural networks are computational models inspired by animals' central nervous systems (in particular the brain) that are capable of machine learning and pattern recognition. They are usually presented as systems of interconnected "neurons" that can compute values from inputs by feeding information through the network.

in a neural network for handwriting recognition, a set of input neurons may be activated by the pixels of an input image representing a letter or digit. The activations of these neurons are then passed on, weighted and transformed by some function determined by the network's designer, to other neurons, etc., until finally an output neuron is activated that determines which character was read.

Aspect-oriented programming

a programming paradigm that aims to increase modularity by allowing the separation of cross-cutting concerns

Aspect-oriented programming entails breaking down program logic into distinct parts (so-called concerns, cohesive areas of functionality)

But some concerns defy these forms of implementation and are called crosscutting concerns because they "cut across" multiple abstractions in a program.

todd m

i'm a prof @ UCLA. main research interest is modular program dev, understanding, & extensibility the goal is to enable programmers to define & enforce abstractions that allow them to reason abt & extend a program component in isolation, w/o having to understand the entire program.

i have explored new language mechanisms, domain-specific languages, specialized programming idioms, & runtime support for these capabilities. i'm also interested in program specs & validation, automated debugging & program repair, programming by example, & models for concurrency & parallelism.

i have co-advised 2 PhD students w/Alan K & we have taught ~~several~~ several classes together on P.L. design. w/Alex W leading the way, the 3 of us have rebooted these classes into a 2-course sequence: techniques to quickly prototype ~~new~~ P.L., & to explore lang design & programming environments.

@ CDG, collaborate on 2 projects

- the Nava language (w/Hesam S, Yoshiki O, Alex W, & Chris D)

leverages Cyc to automate discovery (theorem prover & knowledge base)

- the Babelsberg object-constraint language (w/Tim Felgentreff, Alan B, & Robert Hirschfeld). I have collaborated on new ~~new~~ techniques to allow expressive constraints while avoiding unexpected nondeterminism due to the interaction w/imperative updates & mutable state.

-

Unity (game engine)



cross-platform game engine with a built-in IDE developed by Unity Technologies

Unix shell



command-line interpreter or shell that provides a traditional user interface for the Unix operating system and for Unix-like systems

The most influential Unix shells have been the Bourne shell and the C shell. The Bourne shell, sh, was written by Stephen Bourne at AT&T as the original Unix command line interpreter; it introduced the basic features common to all the Unix shells, including piping, here documents, command substitution, variables, control structures for condition-testing and looping and filename wildcarding

The most generic sense of the term shell means any program that users employ to type commands. A shell hides the details of the underlying operating system and manages the technical details of the operating system kernel interface, which is the lowest-level, or 'inner-most' component of most operating systems.

amelia m

i'm a statistician interested in the ways that computers can better support people to do data analysis and gain intuition for stats, which is often extremely counter to natural intuitions. I've been interning w/CDG since summer 201³ and have worked mostly with Aran L

in next 2mos, wrapping up PhD thesis, focused on the gap between tools statisticians use to do statistics and data analysis, and the tools we use to teach stats to intro students.

Essentially: I'm imagining statistical programming tools of the future. I think a blocks programming environment w/coupled textual code (much like GP) ~~is~~ is the right way to go. The system needs to be

- INTERACTIVE ALL THE WAY DOWN,
 - _ Support documentation & reproducibility,
 - _ offer a low threshold to learners,
 - _ be comprised of modular pieces (self-articulating)
- & a few more requirements

All parameter values in an analysis should be scrubbable, w/dependent pieces auto-updated, so ~~that~~ users see the effects of all param choices.

We should give away this type of param manipulation for free.

(eg. two versions of a coin-flipping app, one w/ inputs & outputs close enough to see everything moving together, & the other w/more exposition -- w/out trying to explain stat concepts, showing param manipulation can expose probs like this)

This summer, working w/Aran to build more visual explanations of hard-to-intuit stats concepts like Simpson's Paradox, & then moving to MA to begin a position as a visiting assistant prof in Smith College's program for statistical and data sciences.

-

Augmented reality



Augmented reality (AR) is a live, copy, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data.

Augmentation is conventionally in real-time and in semantic context with environmental elements, such as sports scores on TV during a match. With the help of advanced AR technology (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally manipulable.

App iSkull, an augmented human skull for education (iOS OS)

Ballpoint pen



a writing instrument which dispenses a viscous ink from an internal reservoir through the rolling action of a metal ball at its point

The first patent for a ballpoint pen was issued on 30 October 1888, to John J. Loud, a leather tanner, who was attempting to make a writing instrument that would be able to write on his leather products, which then-common fountain pens could not.

Bill Atkinson

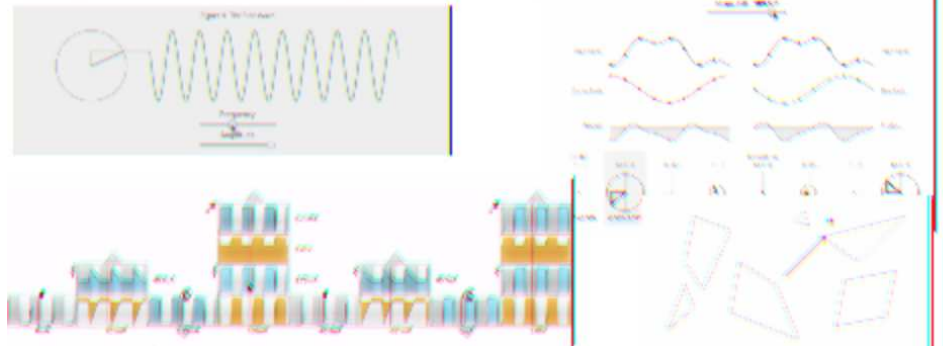
American computer engineer and photographe

Atkinson also conceived, designed and implemented HyperCard, the first popular hypermedia system.

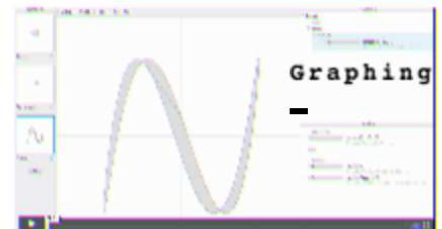
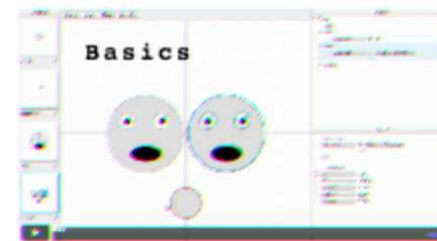
Apparatus

toby s

MOTIVATION: An interactive diagram can be an effective way to communicate a mental model, because it can convey a way of seeing a problem or system-- in particular a way of seeing a space of possibility



but it's currently difficult & tedious to create an interactive diagram. diagrammers must write code to procedurally draw the diagram and respond to user input. This can take hours ~~XXXX~~ or days. Apparatus aims to reduce the time to create an interactive diagram from hours to minutes. In doing so I hope to make interactive diagramming accessible to more people and grow a community and design discipline around the form.



Theo Jansen

The painting machine was a somewhat bigger project than the UFO, developed in 1984-86 in Delft. It consisted of a tube with a light cell situated at its end, which when darkness 'hit' it would start spraying. This created paintings of the silhouettes of the things/people who were standing in front of it.

wind-walking examples of artificial life

Turtles all the way down

"Turtles all the way down" is a jocular expression of the infinite regress problem in cosmology posed by the "unmoved mover" paradox.

The "turtle" metaphor in the anecdote represents a popular notion of a "primitive cosmological myth", namely the flat earth supported on the back of a World Turtle.

Tweak programming environment

Tweak, written by Andreas Raab, a German computer scientist, is a graphical user interface (GUI) layer for the Squeak development environment, which in turn is an integrated development environment based on the Smalltalk-80 computer programming language.

United States Constitution



The Constitution was adopted on September 17, 1787, by the Constitutional Convention in Philadelphia, Pennsylvania

Unlike earlier attempts, the convention was not meant for new laws or piecemeal alterations, but for the "sole and express purpose of revising the Articles of Confederation".

The high quality of the delegates to the convention was remarkable. As Thomas Jefferson in Paris wrote to John Adams in London, "It really is an assembly of demigods."

andrea h

i'm a software dev & math artist
i work out of SF office, though i live in the peninsula
i work w/Vi and Emily in the "eleVR group"
developing various forms of VR content, esp. webVR and VR video.

in the last year, we played w/different spherical camera setups and filming techniques. when we started exploring VR video, there were no easy consumer grade VR cameras available. although we're interested in content & what can be done w/the medium, we've spent a lot of time developing tools & methods to record vr video. we're esp interested in exploring how video changes when there is no longer a "frame" but you can see everywhere, & creating semi-interactive experiences.

we're also excited about the junction of VR & math art. in particular, it can be hard to show & explain 3d objs from text & flat pics--not to mention more complex 4d geometries. we've worked on a couple 4d math art vr viz's in the last yr, "monkeys" & "hypernom," both of which will be exhibited @ Bridges this summer along with a paper about the novel head orientation mapping scheme in hypernom.

i also do a log of math art projects & enjoy creating fun ways to share my love of math w/others through interactive workshops and art. e.g., Fibonacci Lemonade, a layered lemonade drink whose flavor intensity increases exponentially according to the fibonacci sequence. I have an AAAS talk on "Math Art from Everyday Materials."

i am co-founder of the Octahedral Group, an org of math artists in the bay area.

i anticipate continuing to merge math & vr interests & am particularly excited to continue using vr to help elucidate math concepts w/animations & 3d.

Binary space partitioning

method for recursively subdividing a space into convex sets by hyperplanes. This subdivision gives rise to a representation of objects within the space by means of a tree data structure known as a BSP tree.

Boidae



The Boidae are a family of nonvenomous snakes found in America, Africa, Europe, Asia, and some Pacific Islands

Boids are, however, distinguished from the pythons in that none has postfrontal bones or premaxillary teeth, and that they give birth to live young

Prey is killed by constriction; after an animal has been grasped to restrain it, a number of coils are hastily wrapped around it. Then, by applying and maintaining sufficient pressure to prevent it from inhaling, the prey eventually succumbs due to asphyxiation.

Clojure

a dialect of the Lisp programming language created by Rich Hickey. Clojure is a functional general-purpose language, and runs on the Java Virtual Machine, Common Language Runtime, and JavaScript engines

Clojure's approach to concurrency is characterized by the concept of identities, which represent a series of immutable states over time. Since states are immutable values, any number of workers can operate on them in parallel, and concurrency becomes a question of managing changes from one state to another.

CodeMirror

a JavaScript component that provides a code editor in the browser.

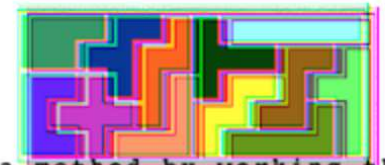
ted kx



each of us are naive end-users when we see a strange sys or come back after 6mo's. i want to stop abusing end-users. a casual user ~~who~~ deserves a flow that is mindful of his 7 plus or minus 2 memory ~~items~~ items & is not 90% sub-tasks.

An ActiveEssay is the natural form. The user is explaining something & code is just part of it. Spreadsheets are compelling & they only lack every single thing we want: flowing text, freedom from boxes, & seeing the code.

Creating a narrative is the goal. It should be easy to compose, & great to read, watch, or experience.



suppose you could specify a method by working thru an example case, while also supplying a bit of extra info. computer power to discover the program from these scattered hints.

"Casual Coding" is an end-user authoring system that has plain text w/active spreadsheet cells embedded. Except these cells aren't really there. There is only text. Wings pane: user works an example, & that is translated into code. Marko R is working w/me.

Constraints are appealing bc instead of telling sys what to do, simply supply constraints. In practice, difficult to use.

Secret of career path is to follow Alan K & Dan I. Worked on every version of Smalltalk at PARC. Built 2 virtual mem sys for Smalltalk, the "explain" code feature. Assisted Bill Atkinson on HyperCard. Worked on Etoys @ Disney, Updates, MethodFinder, & seriali~~z~~^e

The Last Starfighter



1984 science fiction adventure film directed by Nick Castle

The Last Starfighter, in addition to Disney's Tron, has the distinction of being one of cinema's earliest films to use extensive computer-generated imagery (CGI) to depict its many starships, environments and battle scenes.

The computer graphics for the film were rendered by Digital Productions on a Cray X-MP supercomputer. The company created 27 minutes of effects for the film. This was considered an enormous amount of computer generated imagery at the time.

The Walt Disney Company

The *WALT DISNEY* Company

The Walt Disney Company, commonly known as Disney, is an American diversified multinational mass media corporation headquartered in Walt Disney Studios, Burbank, California. It is the largest media conglomerate in the world in terms of revenue

In 1928, to recover from the loss of Oswald the Lucky Rabbit, Disney came up with the idea of a mouse character named Mortimer while on a train headed to California drawing up a few simple drawings. The mouse was later renamed Mickey Mouse and starred in several Disney produced films.

In 1954, Walt Disney used his Disneyland series to unveil what would become Disneyland, an idea conceived out of a desire for a place where parents and children could both have fun at the same time.

aran l

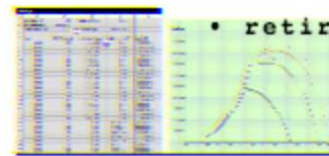
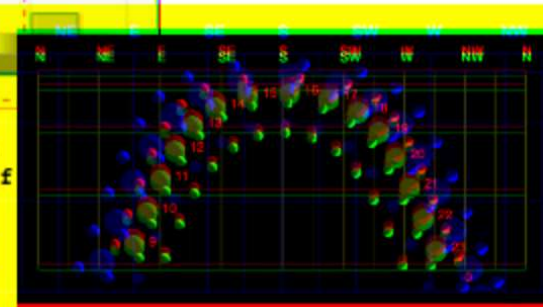
i've been a VPRI member since oct '11, before which my research life included 12yrs in japan, 1yr in Denmark, 1/2yr in Switzerland. Further back, I was a member of a software advanced tech team (in the 80s when advanced tech basically meant OOP) for IBM in Britain. That's where I came across Smalltalk.

i have an active--though somewhere short of morbid-- interest in how things could be otherwise; it bothers me that software apps are tuned to present a single outcome at a time, given how valuable it can be to see what other outcomes are nearby & how they differ

SUBJUNCTIVE INTERFACES: interfaces that support exploring multiple scenarios in //



• if you're trying to understand the path of an almost-new moon across the night sky, it helps to see diff. seasons.



• retirement

• line-break policy

Else if I am a word start and my predecessor's right plus my word's width is greater than the right margin, pursue the goal of being at the start of the next line

• recently, i've been looking @

alternatives in applications that play out in time. i'll show a traffic simulation... all these GNAW AWAY @ making alternatives as common as undofredo

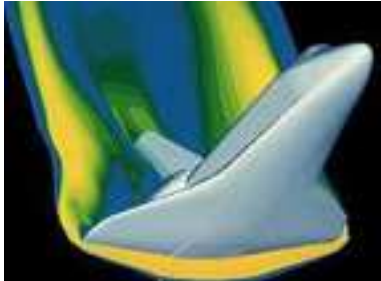
Commodore 64



The Commodore 64, commonly called C64, C=64 (after the graphic logo on the case), occasionally CBM 64 (for Commodore Business Machines), or VIC-64, is an 8-bit home computer introduced in January 1982 by Commodore International.

It remains the highest selling computer of all time. The C64 took its name from its 64 kilobytes (65,536 bytes) of RAM, and had favorable sound and graphical specifications when compared to contemporary systems such as the Apple II.

Computational fluid dynamics



Computational fluid dynamics is a branch of fluid mechanics that uses numerical methods and algorithms to solve and analyze problems that involve fluid flows.

The fundamental basis of almost all CFD problems are the Navier–Stokes equations, which define any single-phase (gas or liquid, but not both) fluid flow.

shawn d



i visited ~~XXX~~ the SF office a few weeks ago, after reaching out to Chaim G following the Earth Primer launch. I'm honored to be invited as a guest speaker, & looking fwd to LA

I grew up in Tucson, AZ building stuff w/dad in our workshop: r/c cars, planes, rockets, &c. I was obsessed w/fireworks & explosives, but managed to escape childhood w/all digits intact.

i studied CS, biophysics, & molecular programming. as a grad student & postdoc, i collaborated w/many talented ppl in the labs of William Shih & George Church to build experimental methods & CAD tools for programming "DNA origami" self-assembly. To recruit students to our field, i founded BIOMOD, a nano-design competition for undergrads (w/800+ from 15 countries participating since 2011). Recently, i started my own lab at UCSF. After 2.5yrs, we're starting to get traction on some initial projects.

overall, my main goals are to empower students & empower patients.

i like to "open-source" my work when possible, & like to be "open-process" as well.

lately i've been learning about game design & virtual & augmented reality. i'm looking fwd to experimenting w/these new media at the intersection of science, role-playing, & collaborative gaming, esp during this unique moment before the advertisers move in :)

assigns new examples into one category or the other, making it a non-probabilistic binary linear classifier

Synergetics (Fuller)

Synergetics is the empirical study of systems in transformation, with an emphasis on total system behavior unpredicted by the behavior of any isolated components, including humanity's role as both participant and observer.

System

A system is a set of interacting or interdependent components forming an integrated whole or a set of elements (often called 'components') and relationships which are different from relationships of the set or its elements to other elements or sets.

The term is from the Latin word *systema*, in turn from Greek σύστημα *systema*, "whole compounded of several parts or members, system", literary "composition"

Following are considered as the elements of a system in terms of Information systems: – Input Output Processor Control Feedback Boundary and interface Environment

Terry Winograd



Terry Allen Winograd (born February 24, 1946) is an American professor of computer science at Stanford University, and co-director of the Stanford Human-Computer Interaction Group. Winograd built a blocks world, restricting the program's intellectual world to a simulated "world of toy blocks". The program could accept commands such as, "Find a block which is taller than the one you are holding and put it into the box"

barbara e

i'm a 3rd-yr part-time PhD in humancenteredcomputig @ georgia tech. this fall i took "Knowledge-Based AI" w/Dr. Goel & we wrote intelligent agents that could solve Raven's Intelligence Tests. This spring, ~~XXXX~~ studying Online Communities, ~~■~~ used qualitative methods to study Deviant Art.

I am working full-timm as a Sr. Research Scientist @ georgia tech. 1/2-time to Expanding Computing Education Pathways (E.C.E.P.) Alliance, trying to help states make changes to their CS pathways.

My work includes teaching others how to plan & run financially sustaining comuting summer~~z~~ camps for ~~4~~⁴-12 grade students, projects to help African American and female students pass the AP CS A exam, & workshops to train the trainers. I have run Project Rise UP 4 CS @ Georgia Tech to help more African American students pass the exam... expanding to Bowie State University in Maryland, Florida International University, Columbus ~~Shate~~ State University

The other 1/2-time is dedicated to eBook projects. Our CS Learning 4 U Lab at Georgia Tech adding features to the Runestone Interactive Platform, ~~■~~ adding practice problems to the

How to Think Like a Computer Scientist -
Interactive Addition eBook
& creating new eBooks using a

~~WORKED-EXAMPLE~~ + PRACTICE approach.

The new features for Runestone are based on reseach in ed psychology & include multiple-choice q's w/multiple feedback, Parsons problems, & audio tours of code. I would ~~like~~ like to explore making Parsons problems adaptive for my dissertatin work. Our new eBook is to help prepare teachers who don't know ~~textual~~ textual programming to teach the programming concepts in the new CS Principles course. The other eBook is an AP CS A exam review book, which has been used by the Rise Up projects.

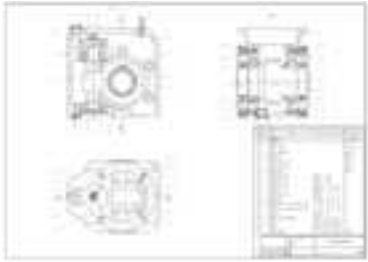
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Computer graphics



graphics created using computers and the representation of image data by a computer specifically with help from specialized graphic hardware and software.

Computer-aided design



the use of computer systems to assist in the creation, modification, analysis, or optimization of a design.

CAD output is often in the form of electronic files for print, machining, or other manufacturing operations.

Constraint programming

In computer science, constraint programming is a programming paradigm wherein relations between variables are stated in the form of constraints. Constraints differ from the common primitives of imperative programming languages in that they do not specify a step or sequence of steps to execute, but rather the properties of a solution to be found. This makes constraint programming a form of declarative programming.

saketh k

working w/Aran L & Alex W on a data viz language brings the essence of D3 to useful ctx for non-expert programmers. we aim to separate key concepts D3 introduces (e.g., the data join) from JS impl details. our goal is to make describing powerful viz easier.

DATA LITERACY FOR THE AVERAGE USER

to this end, we have explored describing several viz methods in Snap, & have had some success describing said viz in a declarative style, reminiscent of vanilla D3. we envision this language as a way to explore the space of data viz, such as the env showcased by Bret V in "Drawing Dynamic Visualizations" & tools like Tableau and Plotly. In the long term, we hope to tie this language together w/such environments to provide a cohesive environment for non-expert users to viz, interact w/ & understand data.

the project is still in a very early stage & a lot of the ideas are very much in flux, so i'm looking fwd to meeting everyone & getting a better understanding as to the direction in which we can take this project, and how we can lead to improvements in the area of data viz.

—

Steampunk

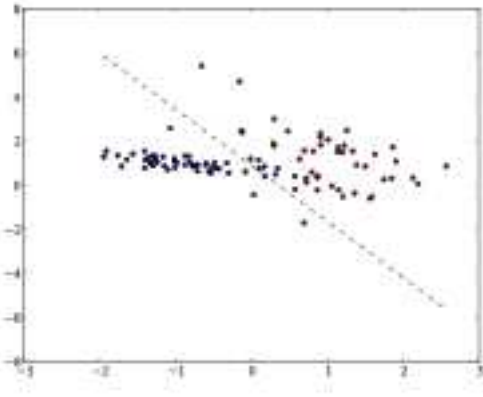


sub-genre of science fiction that typically features steam-powered machinery
Steampunk also refers to any of the artistic styles, clothing fashions, or subcultures, that have developed from the aesthetics of steampunk fiction, Victorian-era fiction, art nouveau design, and films from the mid-20th century

Subjunctive mood

The subjunctive is a grammatical mood found in many languages. Subjunctive forms of verbs are typically used to express various states of unreality such as wish, emotion, possibility, judgment, opinion, necessity, or action that has not yet occurred

Support vector machine



supervised learning models with associated learning algorithms that analyze data and recognize patterns, used for classification and regression analysis. Given a set of training examples, each marked as belonging to one of two categories, an SVM training algorithm builds a model that

bert f



part-time steampunk.

i have a background in realtime computer graphics, did some VR in the 90s, & my PhD 10yr ago was about realtime non-photo-realistic rendering (abusing graphics cards for animated line graphics). What brought me to

this group was my background in smalltalk: I've been engaged in the Squeak open-source community since its beginning in 1996, & working w/Alan's group professionally since 2006.

I'm interested in end-user programming & educational authoring tools (Etoys for OLPC was an exciting project I worked on) but I'm also fascinated by VM tech. Now, I'm working on a mix of these two: building a VM to run GP in the web browser. I made similar VMs for Smalltalk-78 and Squeak before. Possibly I could apply that to the Software-Longevity ideas Alan and Long have been exploring.

In the future, I might want to get back to graphics-related stuff, VR/AR is en vogue again & maybe this time it sticks?

(would be fun)

Otherwise I'll work on anything that's needed, I don't have a strong agenda on my own.

I like ~~XPRESS~~ improving our own tools

...

-

Cuneiform

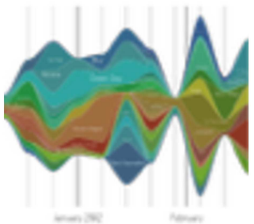
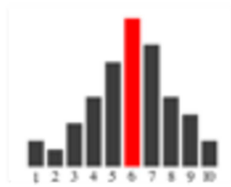


one of the earliest known systems of writing, distinguished by its wedge-shaped marks on clay tablets, made by means of a blunt reed for a stylus

D3.js

a JavaScript library that uses digital data to drive the creation and control of dynamic and interactive graphical forms which run in web browser
enable programmer to first use a CSS-style selector to select a given sets of Document Object Model (DOM) nodes, then use operators to manipulate them in a similar manner to jQuery

Data visualization



skid row history museum & archive

robert o

this has all come together in the past month or 2, but involves many things i've beenthinking abt:

a "box" full of electronics (hd camera, raspberry pi, pico projector)



projector & camera reasonably aligned, for C.V., but misaligned enough for feedback



the this box will blend into the space, as if some sort of "lamp"



looms over urban planning docs, & highlights important parts



Exemplar-SVM classifier to detect current open page



-w/video projection

-& ad hoc linking UI

Squeak



The Squeak programming language is a dialect of Smalltalk. It is object-oriented, class-based and reflective.

Squeak incorporates many of the elements Alan Kay proposed in the Dynabook concept, which he formulated in the 1960s. Kay is an important contributor to the Squeak project.

Many Squeak contributors collaborate on Open Cobalt, a free and open source virtual world browser and construction toolkit application which is built on Squeak.

Star Trek: The Next Generation



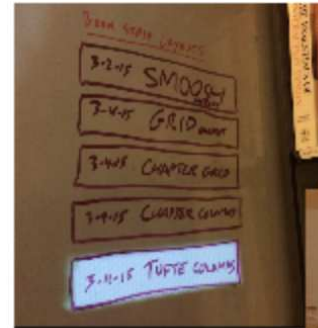
an American science fiction television series created by Gene Roddenberry 21 years after the original Star Trek series as part of the Star Trek franchise
Space: the final frontier. These are the voyages of the starship Enterprise. Its continuing mission: to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no one has gone before.

Hypercard in the ~~XXXXX~~ World

bret v

a "HyperCard in the World" system, where you can point to physical objects, "bless" them, and attach and edit virtual "attachments," such as "collections" (data storage), and "daemons" and "illuminations" (processes), and this would supersede the virtual filesystem.

The system is "built in itself" --the sys-level collections & processes that make the whole thing work are themselves physical objs w/attachments.



- the initial impetus for the sys was this library ~~XX~~ app switcher each "app" is "inside" a box that i drew on the whiteboard. you activate the app by pointing to it with the laser pointer.

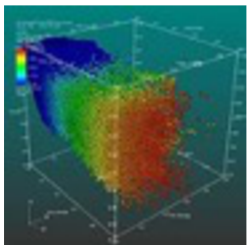
to see how it works, you go to the Object Inspector, hover over "Inspect" & point to one of the boxes on the whiteboard.



In "v1" of the room, DB & procs were visible on a screen.

In "v2," the machinery that implements the sys is itself a large poster. the db is magnetized foam core





the creation and study of the visual representation of data, meaning "information that has been abstracted in some schematic form, including attributes or variables for the units of information" Fernanda Viegas and Martin M. Wattenberg have suggested that an ideal visualization should not only communicate clearly, but stimulate viewer engagement and attention.

Debugger

A debugger or debugging tool is a computer program that is used to test and debug other programs

DeviantArt



DeviantArt, LLC (stylized as deviantART; abbreviated as dA) is an online community showcasing various forms of user-made artwork. It was first launched on August 7, 2000

As of March 2013, the site consists of over 25 million members, and over 246 million submissions, and receives around 140,000 submissions per day.

DeviantArt started as a site connected with people who took computer applications and modified them to their own tastes, or who "deviated" the applications from the original designs. As the site grew, members in general became known as "deviants" and submissions as "deviations"

Domain-specific language

a computer language specialized to a particular application domain. This is in contrast to a general-purpose language (GPL), which is broadly applicable across domains

Examples of domain-specific languages include HTML, Logo for pencil-like drawing, Verilog and VHDL hardware description languages, MATLAB and GNU Octave for matrix programming, Mathematica and Maxima for symbolic mathematics, Specification and Description Language for reactive and distributed systems, spreadsheet formulas and macros, SQL for relational database queries, YACC grammars for creating parsers, regular expressions for specifying lexers, the Generic Eclipse Modeling System for creating diagramming languages, Csound for sound and music synthesis, and the input languages of GraphViz and GrGen, software packages used for graph layout and graph rewriting

robert k

i was introduced to Squeak/Smalltalk as an undergrad in one of Robert Hirschfeld courses at H.P.I. ~~XXXX~~ Potsdam. Since that time I'm fascinated by software environments that can be explored, modified, & evolved by its users. This interest led me to become an intern w/Dan while ~~XX~~ he was at Sun Microsystems. During my internship & in the time thereafter I contributed to Lively Kernel project:

- JS module sys to allow on-demand dependency
- serialization mech. for JS object graph loading to snapshot ~~XXXX~~ state
- wiki system
- (w/Jens L) PartsBin dev workflow
- Morphic implm in HTML 4 object-first dev style like in Self (&combines w/non-morphic, "web stuff")
- a lightweight p2p~~XXXXXX~~ messaging sys w/ Smalltalk-style msg sends to arbitrary sys

MY CURRENT RESEARCH

- f* can we create an env in which "runtime" spans sys boundaries &
- f* have entire env explorable & programmable w/ Smalltalk-style tools (obj representation for inspection & debugging--meta_programming)

A big insight was to "lift" the Unix shell to Live-ly. from UI ~~XXXX~~ standpoint, unix shells allow to run/control/combine apps, but scary/hard-to-learn. when integrated into a Smalltalk-like workspace & w/abstractions to inspect running procs, it's fun! i believe this "lifting" widely applies. some parts needed to provide this model are known, others:

- how to modularize & package apps spanning sys boundaries?
- how to "debug" these apps (i.e., understanding ctrl flows & effects of changes)

i'm working on ~~XXX~~ a prototype called cloxp, a Smalltalk-like dev env for Clojure. point into a piece of code & install a "watcher"--when ctrl flow hits the place, values call-site &c recording. Seeing these recordings together helps to understand.

study of software as a cultural practice appear in Friedrich Kittler's essay, "Es gibt keine Software," Lev Manovich's Language of New Media, and Matthew Fuller's Behind the Blip: Essays on the culture of software

Speech recognition

the translation of spoken words into text

Substantial efforts have been devoted in the last decade to the test and evaluation of speech recognition in fighter aircraft. Of particular note is the U.S. program in speech recognition for the Advanced Fighter Technology Integration (AFTI)/F-16 aircraft (F-16 VISTA)

Spore (2008 video game)



Spore is a 2008 multi-genre single-player god game developed by Maxis and designed by Will Wright.

Praise was given for the fact that the game allowed players to create practically any creature, vehicle and building.

User-generated content is a major feature of Spore;

the creature editor allows the player to take what looks like a lump of clay with a spine and mold it into a creature. Once one has molded the torso, the player can add parts such as legs, arms, feet, hands, noses, eyes, mouths, decorative elements, and a wide array of sensory organs. Many of these parts affect the creature's abilities (speed, strength, diet, etc.), while some parts are purely decorative.

chain g

i'm a game designer / computer scientist. i recently released an interactive book about earth science called Earth Primer, and years ago now worked on a game called Spore.

I'm focused on my PhD research project (I'm ABD @ UCSC) which sits @ intersection of CS & humanities.

I'm interested in articulating a theory and practice of play design, which can be thought of as analogous to game design. Game design affords conceiving of games--regardless of whether they are sports, computer games, or board games--as possessing structural similarities. Game designers (and game scholars) draw upon shared languages and practices for analyzing, discussing, and designing games. Play design, analogously, provides an interpretive structure for thinking about, discussing, and making play practices, from adventure playgrounds to simulation "games." The larger dissertation articulates what play design is, and demonstrates its usefulness as a perspective for thinking and writing about play, games, and computers. Despite the fact that playthings like SimCity are comfortably discussed as "games," they are more productively understood as members of the universe of play: hobbies, toys, playmates, playthings, playgrounds, and play practices.

The central case study of my project is a close analysis of SimCity, looking closely at its technical and aesthetic aspects through a humanistic lens. I am wrapping up some work on precursors, ways of thinking and simulating that heavily influenced it. For example, I have written a kind of cultural/technical history of system dynamics, and am wrapping up a similar kind of history of cellular automata right now. XXXXX The system dynamic chapter would be a good candidate for the journal of Tech and Culture (I am told).

Drupal

Drupal™

a free and open-source content management framework written in PHP used as a back-end framework for at least 2.1% of all websites worldwide

As of August 2013, there are more than 22,900 free community-contributed addons, known as contributed modules, available to alter and extend Drupal's core capabilities and add new features or customize Drupal's behavior and appearance.

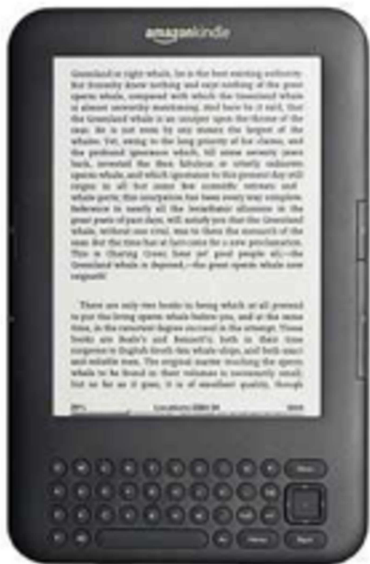
Although Drupal offers a sophisticated programming interface for developers, no programming skills are required for basic website installation and administration

E (programming language)

E is an object-oriented programming language for secure distributed computing, created by Mark S. Miller, Dan Bornstein, and others at Electric Communities in 1997.

In E, all values are objects and computation is performed by sending messages to objects. Each object belongs to a vat (analogous to a process). Each vat has a single thread of execution, a stack frame, and an event queue. Distributed programming is just a matter of sending messages to remote objects (objects in other vats).

E-book



rick m



i've been fortunate to work in--at least dabble in--many areas of C.S. over the past 30-odd years. & yes, a good many fairly odd...

C.A.D. for V.L.S.I. (logic synth & verification), computer algebra, N.L.P., distributed systems, & net-working. (through a chain of acquisitions, S.A.P. wound up owning my N.L.P. patents--those & a quarter

will get you a newspaper). These days i fool around in web front ends & distributed infrastructures.

Work w/Lively Web guys, spend fair amount of time thinking about Cloud apps that really want to be near end-user.

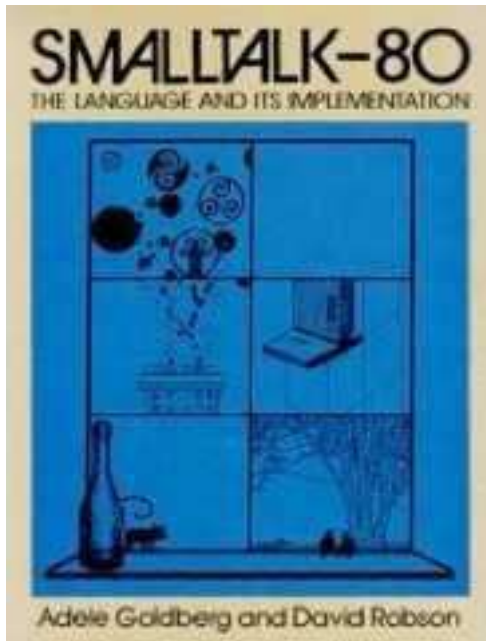
In addition to working @ S.A.P., I have a couple of synergistic jobs. Adjunct Prof at University of Victoria, w/a couple Masters students at any time, & Chief Scientist of US Ignite--next gen net apps in the public interest.

The G.E.N.I. Experiment Engine - (Global Environment for Network Innovations) - distributed cloud & network testbed, w/5K cores over 50 US sites. Deep programmability @ all levels, w/private VPNs. Working w/Northwestern & Princeton, building a container as a service platform across G.E.N.I. The GENI Experiment Engine (G.E.E.) offers one-click slice allocation (docker container) at 20 sites. TO be extended: - multiple images;_wide-areastorage infra; -multi-tenant web services platform (Lively?); -straddle multiple infrastructures, like Canada's S.A.V.I and N.S.F.'s Chameleon.

Chief Scientist, US Ignite - 501c(3) to seed net app 4: ed, health tech, public safety, transport, energy, & advanced manufacturing.

Ignite Distributed Collaborative Scientific Viz Sys
Seamless interaction and immediate updates: small devices, big data. UVic, HPI, UT-Dallas, & CDG>
Y.A.L.P.S. (Yet Another Presentation System) in live

Smalltalk



an object-oriented, dynamically typed, reflective programming language. Smalltalk was created as the language to underpin the "new world" of computing exemplified by "human-computer symbiosis."

designed and created in part for educational use, more so for constructionist learning, at the Learning Research Group (LRG) of Xerox PARC by Alan Kay, Dan Ingalls, Adele Goldberg, Ted Kaehler, Scott Wallace, and others during the 1970s.

Smalltalk was the product of research led by Alan Kay at Xerox Palo Alto Research Center (PARC); Alan Kay designed most of the early Smalltalk versions, which Dan Ingalls implemented. The first version, known as Smalltalk-71, was created by Ingalls in a few mornings on a bet that a programming language based on the idea of message passing inspired by Simula could be implemented in "a page of code."

Smalltalk was the first true object-oriented programming language

Smalltalk-80 syntax is rather minimalist, based on only a handful of declarations and reserved words. In fact, only six "keywords" are reserved in Smalltalk: true, false, nil, self, super, and thisContext. These are actually called pseudo-variables, identifiers that follow the rules for variable identifiers but denote bindings that the programmer cannot change.

Software studies

emerging interdisciplinary research field, which studies software systems and their social and cultural effects.

To study software as an artifact, it draws upon methods and theory from the digital humanities and from computational perspectives on software.

The conceptual origins of software studies include Marshall McLuhan's focus on the role of media in themselves, rather than the content of media platforms, in shaping culture. Early references to the

dan a

```
### besides struggling to finish my PhD,
I've also been helping out with
Evelyn's Ploma pen project.
```

```
On wednesday of the all hands meeting, we'll
have a future intern visit us whom I'll
introduce here (since he's not on the list).
His name is Rupert Deese.
He's finishing up a BS in CS at Harvey Mudd.
He'll be with us for Aug, Sep, & Oct.
```

```
Rupert recently made an active essay/
explorable explanation about evolution &
flocking behavior called
```

```
"Evolving Boids"
```

```
he'll be expanding on this during the internship
& would appreciate any early feedback during
the meeting.
```

-



An electronic book (variously: e-book, eBook, e-Book, ebook, digital book, or even e-edition) is a book-length publication in digital form, consisting of text, images, or both, readable on computers or other electronic devices.

The first e-book may be the Index Thomisticus, a heavily annotated electronic index to the works of Thomas Aquinas, prepared by Roberto Busa beginning in the late 1940s. However, this is sometimes omitted, perhaps because the digitized text was (at least initially) a means to developing an index and concordance, rather than as a published edition in its own right

Some years earlier the idea of the e-reader came to Bob Brown after watching his first "talkie" (movies with sound). In 1930, he wrote an entire book on this invention and titled it "The Readies" playing off the idea of the "talkie"

In 1949 a teacher from Galicia, Spain - Angela Ruiz - patents the first electronic book. Her intention was to decrease the number of books that her pupils carried to the school.

Ecology



the scientific study of interactions among organisms and their environment

priya v

EXECUTIVE BIOGRAPHY

head of innovation & center palo alto
manages the Strategic Customer Engagements being
part of strategic innovation enablement within
Products & Innovation board area at SAP.

Joined SAP in 2000, bringing more than 14yrs of Product Strategy and Definition, Application Dev, Enterprise Architecture, Customer Co-innovation, Field Enablement, Design Thinking and Mgmt experience to her role w/ the company.

works w/strategic customers 1:1

engagement model around the globe to identify & solve end-user enterprise problems by rapid prototyping & demonstrating the desirable viable and feasible aspect of the solutions. The problem solving embraces design thinking and ensures the latest technology elements are integrated not only limited to S.A.P. enterprise products.

She focuses on driving Innovation both inside & outside S.A.P. together w/customers, partners, startups & research institutions to create powerful innovation ecosystem as the saying goes "Innovation is the creation of a viable new offering"

Since joining S.A.P., part of various dev groups E.R.P., C.R.M., Web Channel, On Demand, & H.A.N.A. adoption program & works in close collaboration w/Field teams, Go to market, Sales & Service teams to ensure the realization from concept to consumption.

Thrives in incubating, building high performing ~~XXXXX~~ scalable teams to achieve strategic deliverables, pioneering innovation w/sounds tech focus.

-

Simulation



the imitation of the operation of a real-world process or system over time

A computer simulation (or "sim") is an attempt to model a real-life or hypothetical situation on a computer so that it can be studied to see how the system works. By changing variables in the simulation, predictions may be made about the behaviour of the system. It is a tool to virtually investigate the behaviour of the system under study

Skid Row, Los Angeles

Skid Row is an area of Downtown Los Angeles. As of the 2000 census, the population of the district was 17,740. Skid Row was defined in a decision in Jones v. City of Los Angeles as the area east of Main Street, south of Third Street, west of Alameda Street, and north of Seventh Street. Skid Row contains one of the largest stable populations, between 3,000 and 6,000, of homeless people in the United States

dan i



i was born a physicist & started converting my basement into a personal Exploratorium as soon as I overcame my

fear of the furnace.

In my last year of college, I discovered programming & generally shifted towards computers while getting an EE Masters.

i was fortunate to join Alan K at PARC & spent the next couple of decades working out various schemes for message syntax, language interpretation & graphical display as we developed a series of Smalltalk implementations culminating in the self-supporting Squeak Smalltalk.

in those days i could handle unlimited complexity our focus on education was a reminder of the need to keep things simple) these days i can only tolerate systems that are simple so i no longer need to be reminded. it's a different kind of strength.

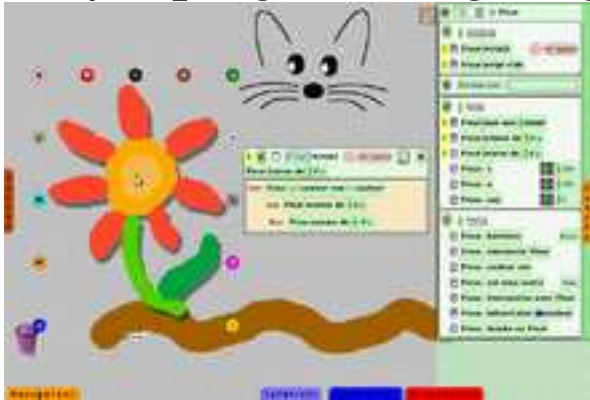
our group in CDG works with Lively Web, a Squeak-like self-supporting dev environment built in html & js. lively is our vehicle for experimentation --you can do exploratory programming in it, save your app as web pages & there's deep leverage too (server, p2p, a/v, pen/touch/ &c).

projects for 2015 (SAP's year of "Run Simple")

- simple workflows/platforms invoked like parts
- time-managed morphic view components
- BYO database for construction & extensions
- graph DB for ppl, projects, scrum notes, &c
- Fabrik-like pin connections for dataflow apps
- BYO browser/arch, w/ widget-panel connections
- freehand sketching • programming by example
- everything-is-a-part • can it be simpler & fast

This may look like BOIL THE OCEAN, but it's modular
-- language collaboration / components are examples
-- design collaboration / user-centric design
-- innovation collaboration w/SAP's complex world

Etoys (programming language)



child-friendly computer environment and object-oriented prototype-based programming language for use in education

Squeak was originally developed at Apple in 1996 by Dan Ingalls. Squeak is a Smalltalk implementation, object-oriented, class-based, and reflective, derived from Smalltalk-80 at Apple Computer. It was developed by some of the original Smalltalk-80 developers, including Dan Ingalls, Ted Kaehler, and Alan Kay. The team also included Scott Wallace and John Maloney.

Evolution

the change in the inherited characteristics of biological populations over successive generations. All life on Earth is descended from a last universal ancestor that lived approximately 3.8 billion years ago

Charles Darwin was the first to formulate a scientific argument for the theory of evolution by means of natural selection. Evolution by natural selection is a process inferred from three facts about populations: 1) more offspring are produced than can possibly survive, 2) traits vary among individuals, leading to different rates of survival and reproduction, and 3) trait differences are heritable

Exploratorium

The Exploratorium is a museum in San Francisco whose stated mission is to change the way the world learns.

Characterized as "a mad scientist's penny arcade, a scientific funhouse, and an experimental laboratory all rolled into one,"

The Exploratorium was founded by physicist and educator Frank Oppenheimer and opened in 1969

Fiducial marker

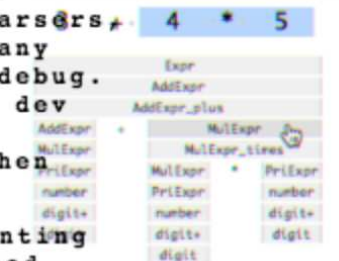
an object placed in the field of view of an imaging system which appears in the image produced, for use as a point of reference or a measure

Q: How can we allow people to be more expressive when communicating to and through computers?

patrick d

OHM is a lib & D.S.L. for parsing & pattern matching. Language is based on Parsing Expression ~~GRAMMARS~~ Grammars (P.E.G.s), simple & straightforward way to formally describe syntax. One of the goals is to make it easier to prototype & implement new P.E.'s (w/Alex W)

OHM VISUALIZER - P.E.G.s offer a simple & succinct way to define parsers, but suffer from same problem as many D.S.L.'s: challenging to write & debug. OHM Viz should make it easier to dev grammars, by allowing devs to see exactly how their grammar works when parsing a particular input.



MOONCHILD - toolkit for experimenting w/new programming interfaces. Based on CodeMirror, a web-based text editor. Adds a framework that makes it easier to add plugins (HTML + JS) which mod & extend source code presentation.

```
var sketch = ...
var sketcher_color = ...
function sketcher_color {
  return ...
}
function sketcher_color {
  return ...
}
```

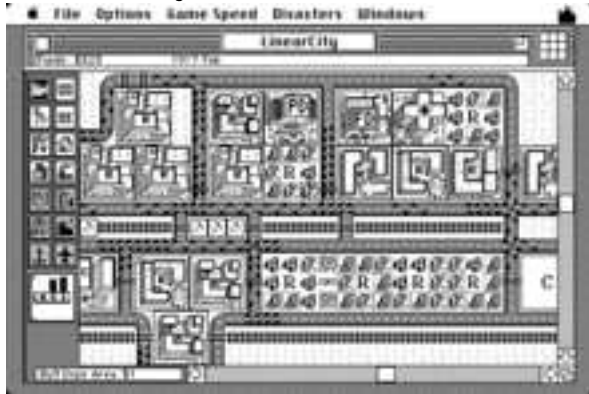
SKISS - "magic sketchbook": as expressive & informal as paper, but w/all kinds of features you'd expect from traditional graphics software. Alex W & I are planning a remote collaboration tool based around this concept.



working w/V.P.Rii /CDG since Aug 2014, w/Alex W (though I live in Munich). Before that, I worked @ Google on Chrome & Android, built & designed multi-touch UIs @ BumpTop & worked on VMS @ I.B.M.

When not computing, I bike, cook, & bake

SimCity

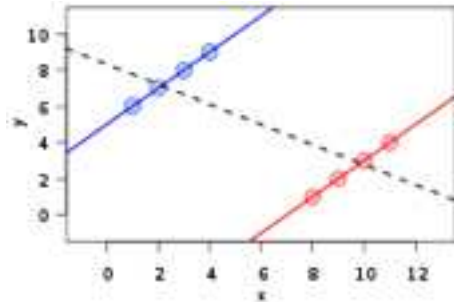


SimCity is an open-ended city-building computer and console video game series originally

designed by developer Will Wright

While developing SimCity, Wright cultivated a real love of the intricacies and theories of urban planning and acknowledges the influence of System Dynamics which was developed by Jay Wright Forrester and whose book on the subject laid the foundations for the simulation. In addition, Wright also was inspired by reading "The Seventh Sally", a short story by Stanisław Lem from The Cyberiad, published in the collection The Mind's I, in which an engineer encounters a deposed tyrant, and creates a miniature city with artificial citizens for the tyrant to oppress.

Simpson's paradox



In probability and statistics, Simpson's paradox, or the Yule–Simpson effect, is a paradox in which a trend that appears in different groups of data disappears when these groups are combined, and the reverse trend appears for the aggregate data.

david s

tuesday, january 20, 2009

THE ICE VIDEOS - ICE stands for Interactive Collaboration Environment. This is the real proto-Croquet architecture I built at Virtus. The ideas were strongly influenced by Apple's OpenDoc architecture and conversations w/Alan K. There were two versions of this, one w/some really neat recursive drag & drop capabilities. The system was collaborative from the start, including voice and video. The "avatars" were flying TVs with video images of the other users.



friday, november 06, 2009

VIRTUS WALKTHROUGH - I created this in 1990 w/ David Easter & Mark Uland. I am demonstrating Virtu s 4 here. The overall design & interaction is almost identical to the original 1990 version. This is using a software renderer that I wrote. It uses portals extensively, & though you won't notice it, it does not actually have a z-buffer. The objects are sorted using a kind of B.S.P. thing I did that is extremely fast.

This is the first system I prototyped the virtual collaboration space in that I showed to Alan K.

I joined Lockheed Martin STS as their Chief Innovation Officer. If it works, it could have big results



George M. Church



George McDonald Church (born August 28, 1954) is an American geneticist, molecular engineer, and chemist.

With Walter Gilbert, Church published the first direct genomic sequencing method in 1984. He has co-developed numerous "genome engineering" technologies since 1997 via either general homologous recombination (recA and lambda-red) or via sequence-specific nucleases. He has co-invented several novel uses for DNA, including detectors for dark matter -- Weakly interacting massive particles (WIMPs), anti-cancer "nano-robots", and strategies for digital data storage that are over a million times denser than conventional disk drives.

Global Environment for Network

Innovations

facility concept being explored by the United States computing community with support from the National Science Foundation

Google



an American multinational corporation specializing in Internet-related services and products

michael n

contracting w/CDG-SF, just started 6wks ago

My BG is designing envs for learning. In 2005 i took a class w/Mitch Resnick which introduced me to Papert's work in constructionism. The following yr I designed a summer camp in Boston that took those ideas to heart about how to design a learning interaction, crossed w/an overall container that resembled something between a free shhool and a Montessori-inspired environment.

After doing that for three years, I became interested in approaches to learning that went beyond the elementary school range. Two friends and I started a community senter, also in Boston, called sprout. We had an open studio that we ran community events at & invited artists & scientists to run public workshops. Some of my favorite projects were a replica of a Theo Jansen machine we built for an annual festival in Boston and a public workshop we ran on making simulations of natural forms.

At present at CDG I've been exploring an outgrowth of a project I started with Toby S, looking at how people think with board games, & using that as the jumping off point to explore simulations. Lately I've been exploring a plant genetics simulation, working w/a friend studying genetics @ berkeley, & am looking around to see what other similar systems might be interesting to model & represent in an interactive/explorabile form.

-

Self (programming language)

Self

Self is an object-oriented programming language based on the concept of prototypes. Self was a dialect of Smalltalk, being dynamically typed and using just-in-time compilation (JIT) as well as the prototype-based approach to objects: it was first used as an experimental test system for language design in the 1980s and 1990s

Self was designed mostly by David Ungar and Randall Smith in 1986 while working at Xerox PARC

Seymour Papert



Seymour Aubrey Papert (born February 29, 1928) is an MIT mathematician, computer scientist, and educator. He is one of the pioneers of artificial intelligence, as well as an inventor of the Logo programming language.

he was the developer of an original and highly influential theory on learning called constructionism, built upon the work of Jean Piaget in Constructivism learning theories.

emily e

i am working on two main things:

(1.) Solar is a toy solar system, part game & part movie. Similar to Toby's axiom that interactive simulations are effective tools for building mental models, Solar is the proposition that narrative and more specifically characterization married with interactive simulation build more memorable medels and may be a more effective means of teaching systems thinking than explanation alone

(2.) WebVR & video. We built a small army of webVR projects, most without but some with spherical video. A favorite from my pile is Escape; No Video is an Island.

Oh, and the blog of course

—

Most of its profits are derived from AdWords
its unofficial slogan was "Don't be evil"

Google Chrome

a freeware web browser

In September 2008, Google released the majority of Chrome's source code as an open source project called Chromium

Google's Eric Schmidt opposed the development of an independent web browser for six years. He stated that "at the time, Google was a small company," and he did not want to go through "bruising browser wars." After co-founders Sergey Brin and Larry Page hired several Mozilla Firefox developers and built a demonstration of Chrome, however, Schmidt admitted that "It was so good that it essentially forced me to change my mind."

Hand



a prehensile, multi-fingered extremity located at the end of an arm or forelimb of primates such as humans, chimpanzees, monkeys, and lemurs.

marko r

i am part of the Lively team, on&off for 5yrs.
back then, introduced by Jens L & Robert K @
the Hasso Platter Institute (H.P.I.) when starting
Master program there, chance to intern w/Dan I in
Palo Alto. That's what got this whole journey
started...

Prior to that, already had a strong interest in DB
tech, esp. NoSQL--this passion is still inside me.
I learned to program quite early in life, so picked
up a couple of programming languages..but there is

more

since i am a core Lively dev, working on many
Lively projects
- modern wiki-oriented ChangeSet implementation, so
that core changes can be made w/out breaking the
sys for everyone. My promise: changes to the core
sys possible ~~XX~~ in online sys w/o drawbacks.

- still-pending impl of a JS debugger in JS. I can
now say that I have seen "JavaScript: The Bad
Parts" quite a couple of times now.

- started to collaborate on "Literate Programming"
project w/Ted K. We call it "Casual Programming"
& are looking to integrate ideas verbalized in
a language like English w/programs implementing
them. It's a vast area. Lots of things that need
to be/feel right for novices (our target).
this year- there are so many things i would like
to do

CodeDB - combines two passions: DB & PL
now: source code kept in files w/o visible semant&
for parts below that level. want fine-grained S.C.M
& views on source code. Powerful tools.
This is my contribution to vision for "narrative"
for software--understanding by humans & computers.
--

I have been interested in Software Studies lately.
Philosophical bg/ better ed for CS / Software MFA?

number 3 related to the 3-tier architecture: database, application server and client (SAPgui). R/2, which ran on a Mainframe architecture, was the predecessor of R/3. Before R/2 came System RF, later dubbed R/1.

SAP Labs is the research and development organization of the parent company

SAP HANA

short for 'High Performance Analytic Appliance' is an in-memory, column-oriented, relational database management system developed and marketed by SAP AG

SAP HANA originates from developed or acquired technologies, including TREX search engine, an in-memory column-oriented search engine, P*TIME, an in-memory OLTP database acquired by SAP in 2005, and MaxDB with its in-memory liveCache engine

Scratch (programming language)

SCRATCH



Scratch is an educational programming language and multimedia authoring tool that can be used by students, scholars, teachers, and parents for a range of educational and entertainment constructivist projects from math and science projects, including simulations and visualizations of experiments, recording lectures with animated presentations, to social sciences animated stories, and interactive art and music.

The name was derived from the turntablism's technique of scratching (i.e. mixing sounds), relating the ease of mixing sounds to the ease of mixing projects made with Scratch.

Makey Makey Project

eric r

what is now MakeyMakey the product was initiated by two students at MIT Media Lab under the advisorship of Mitch Resnick and is an academic and artistic project.

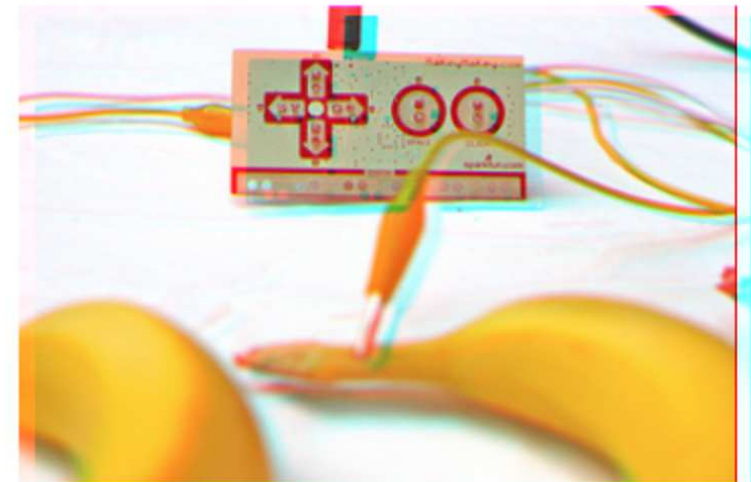
(w/Jay Silver)

we believe that everyone is creative, inventive, and imaginative.

we believe that everyone can create the future & change the world.

so we have dedicated our lives to making easy-to-use invention kits.

before jay & eric created makey makey we worked on other creative tools and invention kits such as Drawdio, Singing Fingers, & Mitch Resnick's Scratch.



Hasso Plattner Institute



IT Systems Engineering | Universität Potsdam

The Hasso Plattner Institute (Hasso-Plattner-Institut für Softwaresystemtechnik GmbH), shortly HPI, is a German information technology university college, affiliated to the University of Potsdam and is located in Potsdam-Babelsberg nearby Berlin.

It is financed entirely through private funds donated by its founder, Prof. Dr. h.c. Hasso Plattner, who co-founded the largest European software company SAPAG, and is currently the chairman of SAP's supervisory board.

HyperCard



HyperCard was an application program and programming tool for Apple Macintosh and Apple IIGS computers, that was among the first successful hypermedia systems before the World Wide Web.

Some HyperCard users employed it as a programming system for Rapid Application Development of applications and databases, others for building interactive applications with no database requirements, command and control systems, and many examples in the demoscene.

The programming language within HyperCard is called HyperTalk and is object oriented. Objects exist in a message path hierarchy and respond to messages generated by either the user or the system itself (timers for instance). Objects inherit properties and attributes from those above them in the hierarchy.

Apple itself never seemed to understand what HyperCard's target market for users should be. Project managers found it was being used by a huge number of people, internally and externally. Bug reports and upgrade suggestions continued to flow in, demonstrating it had a wide variety of users. Since it was also free, it was difficult to justify dedicating engineering resources to improvements in the software. It was not lost on Apple or its mainstream developers that the power HyperCard gave to people could cut into the sales of ordinary shrink-wrapped products

Using Educational Psychology Principles
to Improve Computing Education
mark g

well-supported, research-based principles from
ed psych to design computing learning materials.
for the most part, these principles have never been
applied to evaluated computing education.

- barb already mentioned our ebook to help high school teachers learn CS--completion rates of ~~###~~ over 50%.
- experiments using subgoal_labeling & showing impacts on learning/retention/transfer
- replication studies using multimodal_materials & worked_examples: not getting replication of results. Starting to tease out why learning CS is different from learning math or science.

HELPING STATES CHANGE COMPUTING EDUCATION POLICY -
my main role in the Expanding Computing Education
Pathway Alliance (E.C.E.P.) ~~###~~ has been to spend
time talking to policy stakeholders (Georgia, MA,
CA, South Carolina, Indiana, Alabama, TX, Puerto Rico)
I am constantly amazed @ how states' issues/policies
structures & infrastructures widely differ.

BOOKS AND MOOCs: Finished 4th ed of Introduction to
Computing and Programming in Python: A Multimedia
Approach. Am an active developer of the programming
environment for the book (Jython Environment for
Students, J.E.S.). Currently writing Learner-Cent-
ered Design of Computang Education about providing
computing learning opportunities for people w/life
goals other than being software devs.

I agreed to produce a MOOC for Coursera on the
design of Learning Technologies, w/filming in
June & July.

-

Runestone



A runestone is typically a raised stone with a runic inscription, but the term can also be applied to inscriptions on boulders and on bedrock. The tradition began in the 4th century, and it lasted into the 12th century, but most of the runestones date from the late Viking Age.

SAP AG



SAP AG is a German multinational software corporation that makes enterprise software to manage business operations and customer relations.

SAP is one of the largest software companies in the world.

When Xerox decided to exit the computer industry, they asked IBM to migrate their business systems to IBM technology. As part of IBM's compensation for the migration, IBM was given the rights to the SDS/SAPE software, reportedly for a contract credit of \$80,000. Five IBM engineers from the AI department (Dietmar Hopp, Klaus Tschira, Hans-Werner Hector, Hasso Plattner, and Claus Wellenreuther, all from Mannheim, Baden-Württemberg) were working in an enterprise-wide system based on this software, only to be told that it would be no longer necessary. Rather than abandon the project, they decided to leave IBM and start another company.

SAP is the world's largest business software company and the third biggest independent software provider by revenue.

The company's main product is SAP ERP. The current version is SAP ERP 6.0 and is part of the SAP Business Suite. Its previous name was R/3. The "R" of SAP R/3 stood for realtime. The

evelyn e

i am working on a stylus-based drawing app that tries to mimic a specific ballpoint pen on specific paper.

i am also teaching a studio-based graduate-level course at RISD that teaches fundamental coding concepts so that students begin to integrate programming into their art and design work.

i also help user-test GP and give general feedback about its UX/UI.

in my studio, i make and arrange drawings, painting and handmade lithographs in pairs, loosely based on my intuitive reactions to algorithmic computer graphics.

in the next year, i hope to continue to improve on the ballpoint rendering app and to help integrate it with other projects within CDG that require stylus-based drawing. i will also be wrapping up the RISD course and would like to follow it up with research to reconsider what it means to teach coding within art and design disciplines.

i'd like to take a survey of current approaches and languages used, w/hopes of proposing a multi-semester art/design curriculum centering on computational ideas and their convergence w/artistic goals.

i will continue to user-test GP and other CDG projects & give general UX/UI feedback where i can.

i also hope to submit my artwork to art shows and to apply to arts residency programs.

—

IBM



The International Business Machines Corporation (commonly referred to as IBM) is an American multinational technology and consulting corporation, with headquarters in Armonk, New York, United States.

IBM has 12 research laboratories worldwide and, as of 2013, has held the record for most patents generated by a company for 20 consecutive years

In 1937, IBM's tabulating equipment enabled organizations to process unprecedented amounts of data, its clients including the U.S. Government, during its first effort to maintain the employment records for 26 million people pursuant to the Social Security Act, and the Third Reich, largely through the German subsidiary Dehomag. During the Second World War the company produced small arms for the American war effort (M1 Carbine, and Browning Automatic Rifle). IBM provided translation services for the Nuremberg Trials.

Inkwell (Macintosh)

handwriting recognition technology developed by Apple Inc. and built into the Mac OS X operating system

Intelligence

Intelligence derives from the Latin verb intelligere, to comprehend or perceive.

malta a

LEVERAGING RESEARCH FINDINGS FOR FUTURE CORPORATE MANAGEMENT APPS.

I'M WORKING at the SAP Innovation center in Potsdam, Germany, in a team which is addressing applications for future corporate management. Mainly, we're developing prototypes demonstrating the possibilities of using the most suitable technologies and user experience out there

I am responsible for a few research collaborations, where we see potential to translate and apply the research findings to our applications.

PROGRAMMING MODELS AND DEVELOPMENT TOOLS FOR SAP HANA. Before the ICP joined Tanja's org, I was responsible for projects dealing w/new platform services for HANA (e.g., a business ~~INFORM~~ object layer at DB level) & development tools (e.g., a convenient & performant test data generator & a static A.B.A.P. code analysis toolkit).

RESEARCH: CONTEXT-ORIENTED PROGRAMMING AND PROLOG-BASED AOP. Before I joined SAP, I worked in Robert Hirschfeld's research group on context-oriented programming. C.O.P. extends O.O.P. to layers that may contain alternative method implementations, which is similar to multi-methods. Layers can be used to implement behavioral variations for specific control flows by composing them for a computation at runtime. I developed a C>O.P. language extension to Java called JCop. The goal was to carefully define the extension such that it felt as natural as possible to Java devs.

JCop also integrates an A.O.P.-like pointcut-based way to compose layers.

I studied and worked at the University of Bonn & developed an A.O.P. extension to Java based on a Prolog-based A.S.T. representation of the code (that was a while ago, during the A.O.P. hype of 2005/06).

Prolog

a general purpose logic programming language associated with artificial intelligence and computational linguistics.

roots in first-order logic, a formal logic, and unlike many other programming languages, Prolog is declarative: the program logic is expressed in terms of relations, represented as facts and rules. A computation is initiated by running a query over these relations

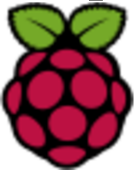
Python (programming language)



Python is a widely used general-purpose, high-level programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C

Python supports multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles.

Raspberry Pi



The Raspberry Pi is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools

Code Blocks

glen c

I'm calling**
it You SUNK
My Code Ship.
In this one,
the components
(mounted on
magnet-backed
foam-core) **
make more of
a map (stable
landscape) &
you place the

Eye of Sauron
over their correspondng
QR code to summon thh code
on my computer. Ideally,
there would be multiple
Eyes which open things up in
dedicated spaces so you could
view code side-by-side.

Part of ** the reason these are
printed on foam-core is that I
wanted the flexibility to move
things around. I spent a bit of time making the
magnetic pieces have the right amount of pull so
that things would stay stable until you made it
clear w/force that you wanted to move them.
Still lacking in ** lots of ways. For one, doesn't
represent any dynamic data, just component. For
another, id doesn't usefully show how these
components fit together.

Technically speaking, negatively sensing QR codes
was finnicky. I heard that these would do better.

of course, we don't really want any visible fiducial
s but alas!

Iran



officially the Islamic Republic of Iran since 1980
Iran is home to one of the world's oldest civilizations

Java (programming language)



Java is a computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible.
Java was originally designed for interactive television, but it was too advanced for the digital cable television industry at the time.
Sun Microsystems released the first public implementation as Java 1.0 in 1995. It promised "Write Once, Run Anywhere" (WORA), providing no-cost run-times on popular platforms.

JavaScript



a dynamic computer programming language.
JavaScript is a prototype-based scripting language with dynamic typing and has first-class functions.
JavaScript was originally developed by Brendan Eich. While battling with Microsoft over the Web, Netscape considered their client-server offering a distributed OS, running a portable version of Sun

mahadi e



i still remember the first program i wrote. it was a simple code on the Commodore 64 that frequently changed screen bg color
Born in Iran where every kid should become a doctor or engineer, i decided to become a computer engineer after getting my B.Sc I've been moving from one place to another to learn more about Computers. I joined CDG as a postdoc beginning July '14 & have been fortunate to work with giants like Alan K. projects



PHRAISIER - lightweight wrapper around Chrome's speech recognition library, which lets you specify phrases and map speech functionality. You can create commands easier, & can match speech to texts w/o spaces.

PEG-GEN - grammar-based sentence generation algo for Parsing Expressing Grammars (P.E.G.s). Our tech extends the idea of derivatives, & uses a novel algorithm based on derivatives, applicable to any grammatical formalism for which the derivative can be defined. Check soundness of a parser, white-box testing, & compiler performance evaluation. (w/ Tony G-J & Alex W)

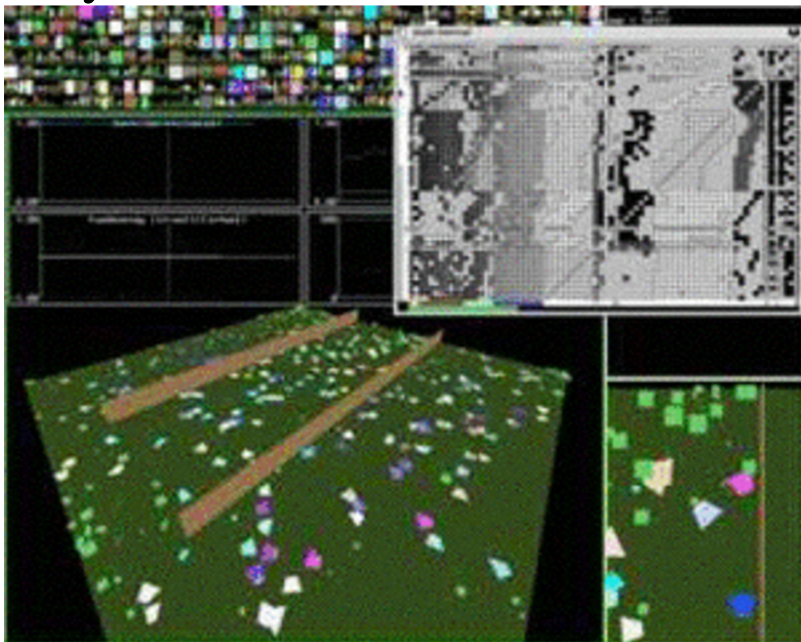
DWARFCUCUMBER - tiny & semi-auto behavior-driven testing framework w/UI for JS. Lets the tester describe (in natural language) how program should behave.

Testing JS programs

- BJEST (Behavioral Conformance Testing tool for Javascript) influenced by QuickCheck instead of writing cases, specify behaviors (w/predicates).
- ConMockolic - mocks library calls & helps concolic testing scale better. ConOlic testing combines symbolic & concrete execution.



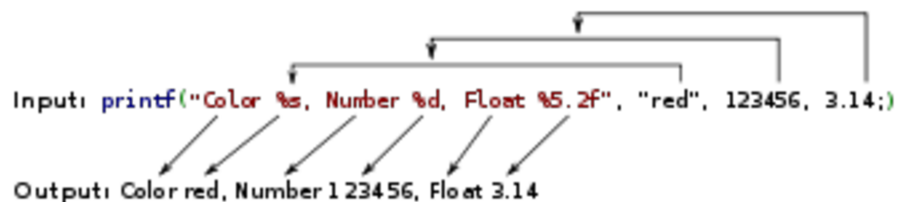
Polyworld



program written by Larry Yaeger to evolve Artificial Intelligence through natural selection and evolutionary algorithms.

Each individual makes decisions based on a neural net using Hebbian learning; the neural net is derived from each individual's genome.

Printf format string



Printf format string (of which "printf" stands for "print formatted") refers to a control parameter used by a class of functions in the string-processing libraries of various programming languages.

Programming language

A programming language is an artificial language designed to communicate instructions to a machine, particularly a computer.

The earliest programming languages preceded the invention of the computer, and were used to direct the behavior of machines such as Jacquard looms and player pianos.

The description of a programming language is usually split into the two components of syntax (form) and semantics (meaning).

jens l

i have been interested in live programming of active content since i worked on tile scripting extension for the Sophie Multimedia book authoring environment at Impara.

i started to pursue a PhD @ the HPI & joined the Lively Kernel team at Sun Microsystems as an intern, where we worked on visually scripting components in Lively Fabrik & transforming Lively Kernel into a Self-supporting System.

last yr i submitted my doctoral thesis-- using scriptable parts in a shared repository & scoping changes to the environment in context-oriented layers.

motivation: how to (collaboratively) evolve tools & their environment while using them.

even though lively cannot yet be considered an end-user environment, programming in it, using parts, ~~is~~ it can feel pretty casual. I'm interested in how to take this further & make the creation of active content more ~~like~~ like sketching on a sheet of paper or a white board.

FIRST STEP: make Microsoft surface stylus pen a **FIRST CLASS** citizen in lively worlds. Morphic worlds & pen-based sketches fit nicely, since both assume a fixed 2d space/ just to sketch a world or morph should not be enoughh--need to enable pen-based interaction to create/mod morphs by drawing them.

lively should automate all the boring repetitive things in the time of web & mobile appliances.

this requires lively (or next sys) to become a more personal experience again. In our work w/Lively Wiki & Webwerkstatt, we noticed that not everybody felt as comfortable to do all the ir work in public. We therefore want to bridge gap w/help of personal (shareable) cloud storage service for worlds & parts, distributed on web & mobile.

Microsystems' Java. Because Java was a competitor of C++ and aimed at professional programmers, Netscape also wanted a lightweight interpreted language that would complement Java by appealing to nonprofessional programmers, like Microsoft's Visual Basic

Julian Assange

an Australian publisher and journalist

Assange was a hacker as a teenager, then a computer programmer before becoming known for his work with WikiLeaks, initially started in 2006

Jython



implementation of the Python programming language written in Java

In March 2008, Sun Microsystems announced the hiring of Ted Leung and Frank Wierzbicki to work on Jython and Python, similar to Sun's hiring of two JRuby developers

Koko (gorilla)

a female gorilla who, according to Francine "Penny" Patterson, her long-term trainer, is able to understand more than 1,000 signs based on American Sign Language, and understand approximately 2,000 words of spoken English.

Library of Alexandria



The Royal Library of Alexandria, or Ancient Library of Alexandria, in Alexandria, Egypt, was one of the largest and most significant libraries of the ancient world

The library is famous for having been burned, resulting in the loss of many scrolls and books, and has become a symbol of the destruction of cultural knowledge.

long n

```
XXXXXXXXXX i am an undergrad @ UCLA (CS major).
after a very brief stint in the startup world, which
left a bad taste in my mouth, I decided that research
was more fun & rewarding. Motivation: harness
tech for the advancement of humanity; the boons
of civilization did not just fall from the sky--
humans had to build it piece by piece. How do we
force-multiply this process?
```

```
However, the great obstacle to progress is that
we humans have a bug--our brains still think that we
are hunter-gatherers on the plains of sub-Saharan
Africa.
```

```
Setting aside the possibility of genetically
engineering a better human, we must keep in mind
the constraints of our hunter-gatherer brains.
```

```
THERE ARE CURRENTLY TWO THINGS THAT OCCUPY
MY MIND
```

```
1. HOW to ensure that the Library of Alexandria
should never perish again. We have an enormous
amount of digital data stored on perishable
media and designed to run on hardware that will
be obsolete and break in a few years. How do
we ensure our heritage will be available to our
descendants 100 years from now? 1000 years from now?
I made a very small contribution to this effort w/
my Cuneiform system, the paper for which I submitted
to Onward! Essays this year.
```

```
2. How to make computing go from having a few
"high priests of a low cult" to having many
"laymen of a high cult." Specifically, I want to
do this with APL, a cryptic but powerful language
for manipulating arrays of numbers.
```

—

Parsing expression grammar

a type of analytic formal grammar, i.e. it describes a formal language in terms of a set of rules for recognizing strings in the language

Syntactically, PEGs also look similar to context-free grammars (CFGs), but they have a different interpretation: the choice operator selects the first match in PEG, while it is ambiguous in CFG.

This is closer to how string recognition tends to be done in practice, e.g. by a recursive descent parser

Compared to pure regular expressions (i.e. without back-references), PEGs are strictly more powerful, but require significantly more memory.

Peer-to-peer



A peer-to-peer (P2P) network is a type of decentralized and distributed network architecture in which individual nodes in the network (called "peers") act as both suppliers and consumers of resources, in contrast to the centralized client-server model where client nodes request access to resources provided by central servers.

the concept was popularized by file sharing systems such as the music-sharing application Napster (originally released in 1999)

jens m

ever since i first saw Scratch, i have been asking:

WHY LET KIDS HAVE ALL THE FUN?

i want to use scratch to build scratch, & i'm tired of discussing how to make transition from blocks programming to "real" programming. there should not be a difference

i'm working on GP w/john & yoshiki. this year i want to test an Alpha w/user groups to see what works & what can be improved.

i'm convinced that we can take blocks based programming much farther & that we'll discover surprising insights along the way.

but it's not just about blocks for me. ever since first being exposed to (digitalk) smalltalk in the early 90s i've completely lost patience w/ any computational system (programming or otherwise) that isn't completely "live," reactive, concrete, malleable, & explorable. Making GP be such an interactive "lively" environment

MAKES MY HEART SING.

i'm also involved in UC Berkeley's effort to spread "The Beauty and Joy of Computing" by leading the development of the "Snap! Build Your Own Blocks" programming language.

prior to joining CDG i've been corporate legal counsel & programmer for microsoft (5yrs) & attorney-at-law in private practice (12yrs) as well as a law-lecturer for German state-institutions. While attending law school I freelanced as a smalltalk programmer for IBM R&D.

I live in Stuttgart w/my wife & two sons & i love fooling around with every musical instrument i can lay my hands on

-

Literate programming

Literate programming is an approach to programming introduced by Donald Knuth in which a program is given as an explanation of the program logic in a natural language, such as English, interspersed with snippets of macros and traditional source code, from which a compilable source code can be generated

Lively Kernel



The Lively Kernel is an open source web programming environment. It supports desktop-style applications with rich graphics and direct manipulation abilities, but without the installation or upgrade troubles of conventional desktop applications

Lockheed Martin



American global aerospace, defense, security, and advanced technology company with worldwide interests.

74% of Lockheed Martin's revenues came from military sales.

Artificial Life
as an approach to
Artificial Intelligence

larry y

While working in Alan Ké Vivarium Program at Apple, I drew on the ecology-in-theseecomputer theme & proposed an outlandish scheme to evolve artificial intelligence the same way natural intelligence emerged--through the evolution of nervous systems in an ecosystem. Nature has shown us that evolution provides an engine for exploring an enormous space of possibilities, nervous systems are the ubiquitous natural solution to processing information in an intelligent fashion, and intelligence only makes sense within a context--within the ecosystem in which it ponfers an evolutionary advantage. I will discuss the resulting "Polyworld" computational ecosystem (artificiaal life -> AI), along w/graph-theoretic methods of quantifying & understanding the resulting mechanisms of intelligence.

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scientist/programmer/educator
computational fluid dynamics/██ C.G./ N.N./
handwriting recognition/artificial life.
- 1st 3d hypersonic computational flow field studies over the space shuttle/
- 1st ever whole-body computational sol'n for flow over a submarine ████ (hull/lifting surf/wake)
- 1st feature film using photo-realistic C.G.:
The Last Starfighter, (& Clio/N.C.G.A. award-winning TV commercials)
- 1st (possibly) book*CD-ROM title, Viz of Natural phenomena

@Vivarium, programmed "voice" for Koko the gorilla, introduced Mac 2 Star Trek: The Next Generation, & created Polyworld, evolving N.N. topologies from mutation & recombination of genetic codes via ████
████████████████████ behavior-based sexual repro

@Apple's A.T.G., tech lead on N.N.-based handwriting recog, first "Print Recognizer," now "Inkwell."

@Indiana Univ, evolution of intelligence, using info theory to quantify evolutionary trends
@ Google, dev & applies ████ M.L. techniques

PARC (company)

XEROX.

PARC



PARC (Palo Alto Research Center Incorporated), formerly Xerox PARC, is a research and development company in Palo Alto, California responsible for such well known and important developments as laser printing, Ethernet, the modern personal computer, graphical user interface (GUI), object-oriented programming, ubiquitous computing, amorphous silicon (a-Si) applications, and advancing very-large-scale-integration (VLSI) for semiconductors.

Much of PARC's early success in the computer field was under the leadership of its Computer Science Laboratory manager Bob Taylor, who guided the lab as associate manager from 1970 to 1977 and as manager from 1977 to 1983.

john m

i did my PhD thesis on constraints & ~~HEE~~ UI's ~~xxxx~~ under Alan Borning. i was part of the Self team, where Randy Smith and I created the first version of the Morphic UI framework. Joined Alan's team around '95 & helped created Squeak, Squeak's Morphic and Etoys. Later, Yoshiki & i worked w/a terrific team of designers @ Walt Disney Imagineering r&d to create a prototype hand-held "Parks PDA" built on squeak & tested w/800 guests at Disney's Animal Kingdom. [This was 7yrs before the iPhone, so we had to use various hacks to simulate connectivity, maps, and location awareness). from 2012-2013 i worked w/ Mitchel Resnick @ the MIT Media Lab to create & evolve Scratch (original built on Squeak). During that time i worked closely w/Evelyn, who started as a student, quickly became a key member of the scratch team, & worked on the project for 7yrs.

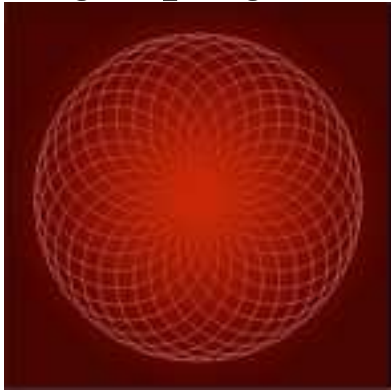
OVER THE YEARS, my interests have shifted from the tech side of CS (OS, distributed sys) to the ppl side (learnable/motivating systems for beginner)

some of my side projects include music (w/ & w/out computers). i play recorder & Renaissance double-reeds/ connecting computers to the real world, & a bit of tinkering w/microprocessors and electronics.

NEXT STEPS FOR GP (John/Jens/Yoshiki)

- useful & learnable by non-professional programmers (age 15+). GP has made design choices:
 - scratch-like blocks
 - fluid conversion between blocks & txt
 - extreme liveness
 - class-based (vs instance)
 - direct delegation
 - explicit^M created closures
 - ubiquitous light-weight concurrency
 - loosely coupled inter-object communications
- these design choices are based on experience w/ earlier systems combined w/ personal intuition, aesthetics, & guesswork. next year: test w/users. GP will also collaborate w/Scratch/Snap/Arduino in informal tech learning settings. Euro Scratch conf GP projects include graphics/sound eds; extensions; app deployment; browser support; android; cloud; meh

Logo (programming language)



Today the language is remembered mainly for its use of "turtle graphics", in which commands for movement and drawing produced line graphics either on screen or with a small robot called a "turtle".

Logo is a multi-paradigm adaptation and dialect of Lisp, a functional programming language "Logo" is not an acronym. It was derived from the Greek logos meaning word or "thought" by Feurzeig,

Marshall Plan



The Marshall Plan (officially the European Recovery Program, ERP) was the American initiative to aid Europe, in which the United States gave economic support to help rebuild European economies after the end of World War II in order to prevent the spread of Soviet Communism.

The reconstruction plan, developed at a meeting of the participating European states, was established on June 5, 1947. It offered the same aid to the Soviet Union and its allies, but they did not accept it

kim r

I am not making tech contributions to CDG currently but i do contribute to other areas of the project.

i started working w/Alan K in 1986 at Apple Computer. I was part of Apple's Advanced Tech Group and the Vivarium Project. I managed the office & consultants, &c, at the Vivarium office in LA & worked closely w/teachers to dev curriculum & projects in the early days of the Mac, HyperCard, and "tile based" programming (i.e. "Playground" a simulation tool kit we created during this project)

i have continued in this vein ever since..moving from Apple to Disney, to then creating our own org:
V.P.R.I.

in the early years of Viewpoints I was involved w/ curriculum dev w/Boys (Squeak), edited a book or two & co-authored "Powerful Ideas in the Classroom).

These days I make sure that VPRI is running smoothly, is fully "compliant" as a 501c3 public charity, that our payroll is met, our bills are paid, our budget is glanced at, and our taxes and other annual reporting is done as required. I work w/the VPRI Board, accountants & lawyers (don't cringe... it's really not *that bad* ;-)) and hey, someone has to do it.

As I've told people one of my main goals is to keep Alan, me, & VPRI far from "cells": padded ones, locked ones, & even ones that appear as part of spreadsheets.

I'm looking fwd to meeting those of you I have yet to meet face to face & seeing others of you who I haven't seen in a while.

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One Laptop per Child



one laptop per child



the creation of affordable educational devices for use in the developing world

jonathan e

i have been long-trapped
in a LOVE_HATE RELATIONSHIP with programming.
programming grants us the god-like power to create
ENTIRE UNIVERSES out of pure thought

but it also afflicts us w/overwhelming gratuitous
complexity--complexity so onerous that it excludes
many people.

MY MISSION IS TO HELP FIX THIS PROBLEM.

After an accidentally successful career as a data-
base technologist i have spent the last decade ex-
ecuting a series of thought experiments to radical-
ly simplify programming: Subtext.

NOW IT IS TIME TO GET REAL.

Balktalk: HyperCard for grassroots social apps
(joint w/ Alex W)

Software tech is subjecting to overwhelming
lock-in effects. The only opportunity for change is
when a new platform emerges, such as the PC or the
web. The next shift is already underway: to phones

Our goal is to slip in a new programming paradigm
during the confusion.

We see a big opportunity: grassroots social app
lications. Say you have started a book club. You need
to coordinate/schedule meetings/what to read? who
is bringing the wine&cheese?. You probably use
some spreadsheets/some forums/polls--you make it all
work with a flood of e-mail... You want a custom web
site like a Rails app or Drupal installation
BUT YOU WERE AN ENGLISH MAJOR.

Balktalk provides a new kind of shared collaborati-
on document. Tree-structured/ typed fields/forms/coll-
ections. DB tables/message queues. Declarative acc-
ess. BALKTALK MEDIATES STRUCTURED MULTIWAY CONVER-
SATIONS> / Hidden is a fully capable prog. lang.

Massive open online course

online course aimed at unlimited participation and open access via the web
Before the Digital Age, distance learning appeared in the form of correspondence courses, broadcast courses and early forms of e-learning
By 1922, New York University operated its own radio station, with plans to broadcast practically all its courses.

Mathematics and art

Mathematics and art have a long historical relationship. The ancient Egyptians and ancient Greeks knew about the golden ratio, regarded as an aesthetically pleasing ratio.
Galileo Galilei in his *Il Saggiatore* wrote that "[The universe] is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures." Artists who strive and seek to study nature must therefore first fully understand mathematics. On the other hand, mathematicians have sought to interpret and analyse art through the lens of geometry and rationality.

Metaprogramming

the writing of computer programs that write or manipulate other programs (or themselves) as their data, or that do part of the work at compile time that would otherwise be done at runtime
Reflection is a valuable language feature to facilitate metaprogramming. Having the programming language itself as a first-class data type (as in Lisp, Forth or Rebol) is also very useful; this is known as "homoiconicity"

Mitchel Resnick



Mitchel Resnick (1956) is LEGO Papert Professor of Learning Research, Director of the Okawa Center, and Director of the Lifelong Kindergarten group at the MIT Media Lab.
Resnick is also a co-founder and a co-principal investigator of the Center for Civic Media at MIT.

Modularity

the degree to which a system's components may be separated and recombined.

ken p

the question our lab @ NYU is asking is:
"How might ppl in the future communicate w/each other in every day life, as computation and display ~~XXXXXX~~ technologies continue to develop, to the pt where computer-mediated interfaces are so ubiquitous & intuitive as to be imperceptible?"

This question is prompting us to explore two inter-related projects: Hyper Reality & Chalktalk.

HYPER REALITY - ~~XXXX~~ combine the best feats of Augmented & Virtual Realities. Participants walk freely around in physical space, interacting w/other people & physical objects just as they do in everyday life. Yet everything those participants see & hear is computer-mediated, thereby allowing them to share any reality they wish. Real & virtual objects can be freely combined.

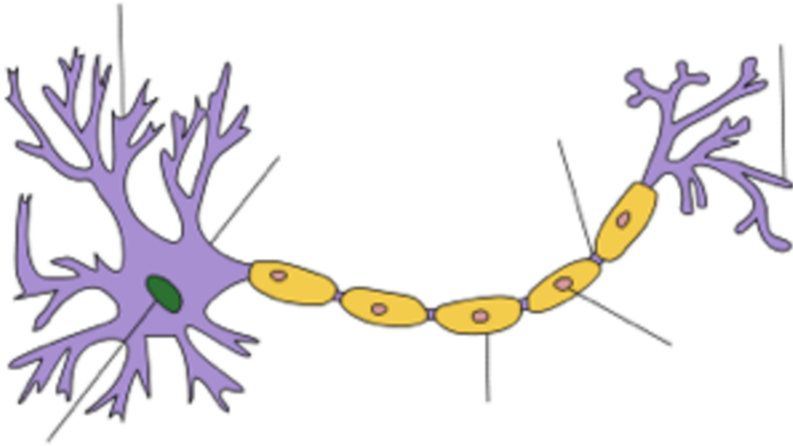
Our Hyper Reality lab is implemented via combo of wireless VR, motion capture, & 3d audio ~~synth~~, to simulate the experience of future hi-res contact lens & spaaial audio displays. We have already encountered many fascinating design questions such as how "subjective physics" should change when you shrink down to a very small size, & what are intuitive ways to virtually "teleport" while ~~XXXX~~ maintaining a sense of physical presence.

CHALKTALK -related project, inspired by the most flexible & protean tool for teaching & collaboration: The Chalkboard. The ultimate expression of Bill Buxton's dictum to do "smart things w/stupid tech," a blackboard or whiteboard requires no prior ~~XXXXXX~~ work to prepare media, while allowing for complete flexibility of subject matter & presentation order. The great shortcoming of the traditional chalkboard is that sketches, once drawn, cannot be animated or otherwise brought to life.

Most computer-assisted animation allow animation/interaction, ~~XXXX~~ yet at the cost of improvisatory flexibility. Our vision is that in the future, ppl will freely combine ~~XXXX~~ verbal & visual description. Literally: Xppl will "draw their ideas in the air."

Up to the 1980s, most NLP systems were based on complex sets of hand-written rules. Starting in the late 1980s, however, there was a revolution in NLP with the introduction of machine learning algorithms for language processing

Nervous system



the part of an animal's body that coordinates the voluntary and involuntary actions of the animal and transmits signals between different parts of its body.

At the cellular level, the nervous system is defined by the presence of a special type of cell, called the neuron, also known as a "nerve cell".

NoSQL

mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases

NoSQL databases are finding significant and growing industry use in big data and real-time web applications

Object-oriented programming

Object-oriented programming (OOP) is a programming paradigm that represents concepts as "objects" that have data fields (attributes that describe the object) and associated procedures known as methods

Rather than structure programs as code and data, an object-oriented system integrates the two using the concept of an "object". An object has state (data) and behavior (code)

karsten s

before joining SAP's innovation center in waldorf (hq) i did research in the field of databases, esp. self-tuning and optimizations. I enjoyed raising research funds and lecturing students as well.

At SAP, I mainly work on HANA-related projects. Some research around programming models, such as Python 2 L compilation-- L is a HANA-internal prog. language w/a ~~XXXXXXXXXX~~ C-Like syntax. Or CalcBase, an advanced GoogleDocs-Spreadsheet application for collaborative data analysis. Other research focused on text analytics together with Springer and event stream processing in the context of sensor data-gathering.

Software dev w/co-innovation partners in the area of large distributed Cloud landscapes for European medical verification system. Followed by some iOS and Android development. I helped to enhance the Available to Promise (A.T.P.) realization in an SAP product.

With the Fiori advent in SAP, I was driving the ~~XXXXXXXXXX~~ launchpad dev and became a Fiori expert for apps and UI5 as well.

But I also had fun :o) when working w/pro soccer players (e.g., the German national team when winning the world cup) to build sensor-based and video-based analytic solutions.

Now I'm in the Silicon Valley Innovation Center of SAP and enjoy S/4HANA projects.

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Morphic (software)

Morphic is a graphics system which uses graphical objects called Morphs for simplified GUI-building which allow for a great degree of flexibility and dynamism.

The name derives from "morphs", the Greek word for form or thing. They take on the role of the basic (graphical) building blocks allowing for a great degree of flexibility.

Morphic was originally developed by Randy Smith and John Maloney for the Self programming language, but later rewritten in Squeak.

Multimodal interaction

provides the user with multiple modes of interfacing with a system. A multimodal interface provides several distinct tools for input and output of data.

The advantage of multiple input modalities is increased usability: the weaknesses of one modality are offset by the strengths of another

Natural language processing



a field of computer science, artificial intelligence, and linguistics concerned with the interactions between computers and human (natural) languages

In 1950, Alan Turing published an article titled "Computing Machinery and Intelligence" which proposed what is now called the Turing test as a criterion of intelligence.

Some notably successful NLP systems developed in the 1960s were SHRDLU, a natural language system working in restricted "blocks worlds" with restricted vocabularies, and ELIZA, a simulation of a Rogerian psychotherapist

kat g

i'm an educator, researcher, & consultant.
My bg is in the arts, specifically dance, science and education. I've taught K-12 and at the university level, and have been involved w/ed research for many years. I've developed curriculum in the arts, middle school science, math, & created digital science simulations and experiments. I've used & conducted research on programming environments such as LOGO, Etoys, early StarLogo, and Scratch, as well as virtual worlds Whyville & River City.

i worked w/Etoys devs & also w/Scratch team in early implementation of the Computer Clubhouses & after school programs in Los Angeles. My students & i appeared w/Alan K in the Japanese NHK production "Superteachers: Alan Kay" & the Ball State Uni production "Squeakers" Currently on 2 projects:

- Creating Citizens: -

I'm working on curricular foundations w/goal of creating informed & intelligent citizens, capable of facing the problems of our global society. MACOS, Man a Course of Study, was developed by Jerome Bruner, and is an inspiration as a whole cycle example of great curriculum.

-H.R.L.A. (Hybrid Reality Learning & Assessment)

I'm working w/a UCLA team (C.R.E.S.S.T. & CV) to study a new framework for monitoring the learning process & diagnosing misconceptions. We are working to develop and pilot an H.R.L.A. by augmenting real-world objects & scenes w/dynamically overlaid virtual information. We have a prototype.

Besides working on all-encompassing curriculum development, i'd like to work on web simulations like Earth Primer or Parable of the Polygons. Our mental models fail w/complex models--we need to provide simulations/games/apps.