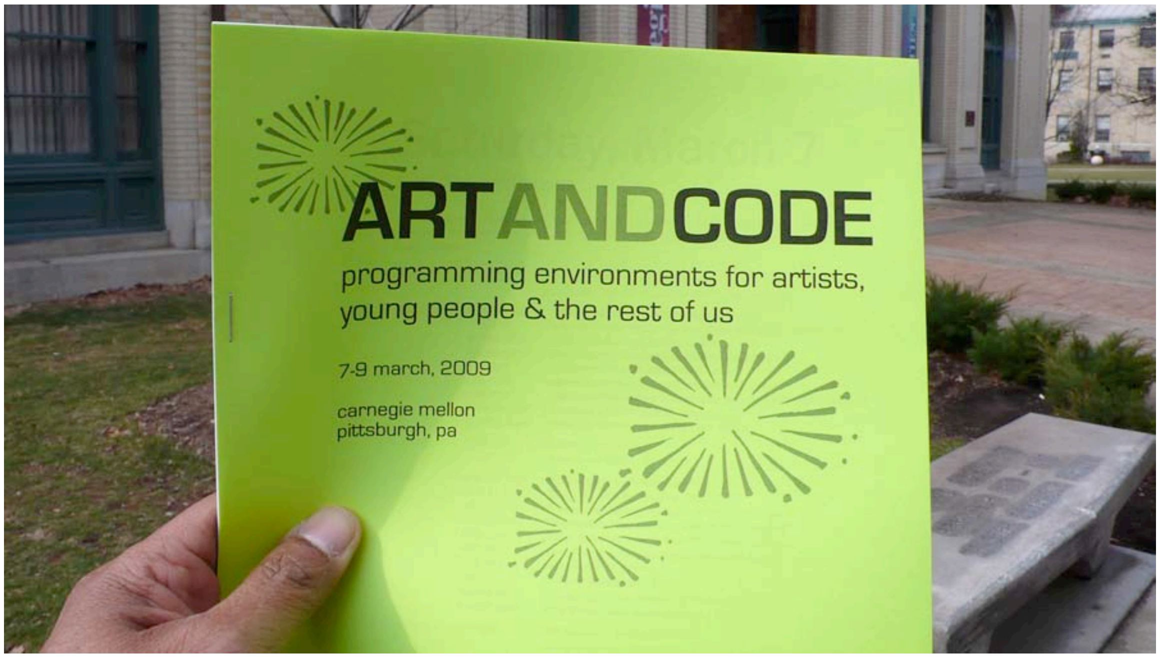

ARTANDCODE
programming environments for artists, young people & the rest of us
7-9 march, 2009
carnegie mellon
pittsburgh, pa

ART && CODE
Final Project Report

Prepared for Microsoft Research and
The Center for Computational Thinking at
Carnegie Mellon University, 10 July 2009

Golan Levin
Director, STUDIO for Creative Inquiry
Associate Professor of Electronic Art
Courtesy Associate Professor of Design
Courtesy Associate Professor of Computer Science
Carnegie Mellon University, Pittsburgh
Email: golan@andrew.cmu.edu
Tel: +1.917.520.7456

Overview

ART && CODE was a Computational Thinking conference concerned with "programming environments for artists, young people, and the rest of us". The conference took place the weekend of March 7-9, 2009 on the campus of Carnegie Mellon University (CMU) in Pittsburgh. It featured 26 workshops in 11 different arts-programming languages, as well as lecture presentations by fifteen of the key innovators leading significant revolutions in software-arts education, an exhibition of computational art, and a film series of abstract generative art.

The *Art && Code* conference brought together a diverse group of 234 registered participants from 7 countries and 23 states of the USA. Their ages ranged from 11 to 75. There were middle-school teachers from a Native American reservation in Montana; university professors of Computer Science; cyberpunk European C++ hackers; graduate students in media arts and interaction design; and a bevy of high-school and undergraduate students from a large swath of the American Rust Belt. The *Art && Code* conference has since developed into an online social network with more than 500 members.

Statement

Just as true literacy in English means being able to write as well as read, true literacy in software demands not only knowing how to use commercial software tools, but how to create new software for oneself and for others. Today, everyday people are still woefully limited in their ability to create their own software. Many would like to create their own programs and interactive artworks, but fear that programming is "too hard." The problem, it turns out, may not be programming itself so much as the ways in which it is conventionally taught.

Recently, a number of projects dedicated to democratizing the education of computational thinking have coalesced. Emerging primarily from the arts sector, a set of new programming tools (and accompanying pedagogic techniques) have been developed by artists, and for artists, to help regular folks and other non-computer-scientists learn to make software. Using visual and musical expression as the "hook", thousands of people have not only learned to code using these new environments, but found new reasons to code in the first place. These toolkits – many of which are free, open-source initiatives – have made enormous inroads towards expanding the computational skills and interests of hundreds of thousands of creative people worldwide.

The *Art && Code* conference was created to support the needs and interests of: artists, designers and musicians who want to create interactive art, information visualization, or personal software tools; teens, undergraduates, and graduate students who wish to combine art, design, interaction, and computer science; middle-school and high-school teachers who want a more expressive way of teaching programming and computer arts; college educators and professional artists who want to learn the most cutting-edge tools for interaction design; computer-science education researchers interested in visually-oriented learning tools; and anyone who has been wanting to learn how to program their own software, but hasn't known where to start.

Art && Code featured workshop and lecture presentations by the lead creators behind some of the most widely-adopted toolkits for arts programming, including Processing, openFrameworks, Max/MSP/Jitter, Pure Data, VVVV, Scratch, Hackety Hack, Alice, ActionScript, ExtendScript, and Silverlight. The ART AND CODE presenters included John Maloney (MIT/Scratch), Golan Levin (CMU/Flong), Tom McMail (Microsoft Research), Ira Greenberg (Miami U. Ohio), Hans-Christoph Steiner (NYU/Pure Data), Evelyn Eastmond (MIT/Scratch), Casey Reas (UCLA/Processing), Zachary Lieberman (Parsons/openFrameworks), Theodore Watson (openFrameworks), Ben Fry (Seed Visualization Lab/Processing), Arturo Castro (openFrameworks), Sebastian Oschatz (Meso/VVVV), Daniel Shiffman (NYU), Luke DuBois (NYU/Cycling74), Dr. Woohoo (ExtendScript), Why the Lucky Stiff (Hackety Hack), Don Slater (CMU/Alice) and Dr. Wanda Dann (CMU/Alice).

Acknowledgments

Art && Code was made possible by a generous grant from Microsoft Research, with oversight from the Center for Computational Thinking at Carnegie Mellon University, whose mission is to "advocate for the widespread use of computational thinking to improve people's lives", and with administrative and logistical support from the STUDIO for Creative Inquiry at CMU, whose mission is to support "atypical, interdisciplinary, and inter-institutional research projects at the intersection of arts, sciences and technologies." *Art && Code* was directed by Golan Levin.

Conference Production Credits

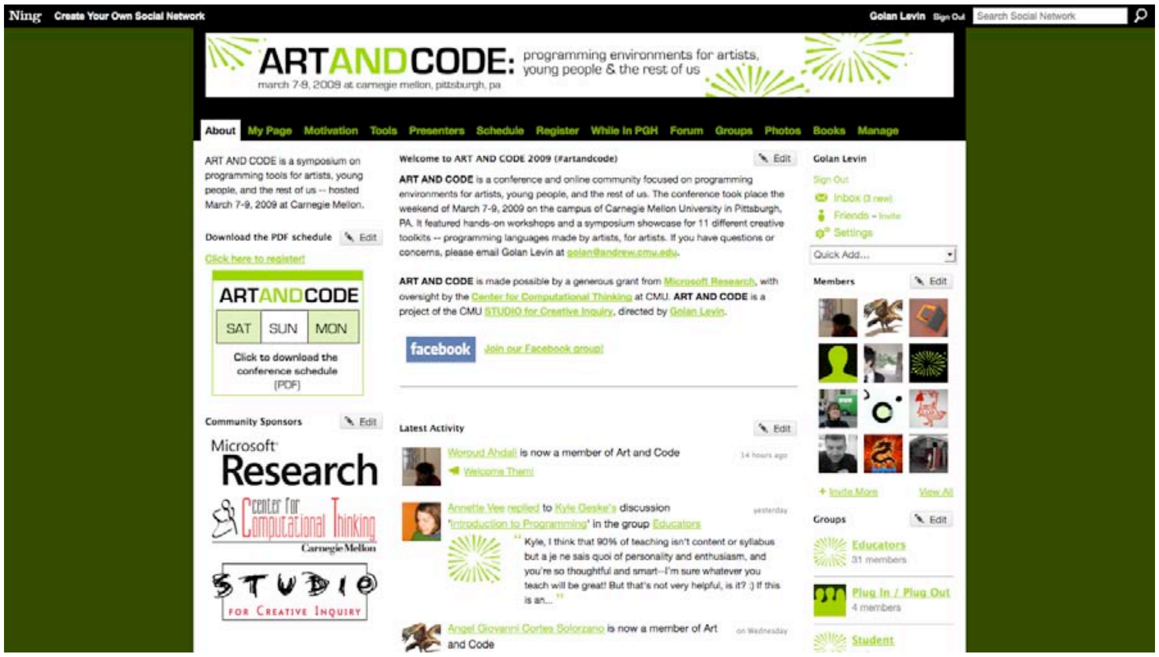
Conference Organizer: Golan Levin (STUDIO for Creative Inquiry and School of Art, CMU)
Executive Producer: Peter Lee (Center for Computational Thinking and Computer Science, CMU)
Business Manager and Logistics: Jennifer Brodt (STUDIO for Creative Inquiry, CMU)
Additional Communications and Logistics: Marge Myers (STUDIO for Creative Inquiry, CMU)
Registration, Catering, Additional Logistics: Carolyn Manley (Conference Services, CMU)
Web Design and Communications: Drue Miller (drue.com)
Production Assistant: Courtney Dow (CMU School of Art)
Registration Database Rehabilitation: Andrea Boykowycz.
Student Volunteers: Lea Allbaugh, Caryn Audenried, Xiaoyuan Jiang, David Kjos Jr., Robert Kotcher, Eamae Mirkin, Alyssa Reuter, Rexy Tseng, Jet Townsend, David Yen, Riley Harmon, (others TBD)

Additional Credits and Acknowledgments

Exhibition Support: Adam Welch and Stefanie Moser (Pittsburgh Center for the Arts)
Exhibition Fabrication & Production: Jeremy Ficca and P. Zach Ali (Digital Fabrication Laboratory)
Film Series Programming: Gary Kaboly (Pittsburgh Filmmakers)
Dorkbot Co-Director & Liaison: Jet Townsend (Tangible Interaction Design program, CMU)
Great Good Place Maker: Eric Stern (Brillobox)

Online Conference Documentation

All *Art && Code* conference activities and discussions are archived at http://www.artandcode.com and/or http://artandcode.ning.com:


Ning
Create Your Own Social Network
Golan Levin
Sign Out
Search Social Network
ARTANDCODE: programming environments for artists, young people & the rest of us
march 7-9, 2009 at carnegie mellon, pittsburgh, pa
About
My Page
Motivation
Tools
Presenters
Schedule
Register
While in PGH
Forum
Groups
Photos
Books
Manage

ART AND CODE is a symposium on programming tools for artists, young people, and the rest of us -- hosted March 7-9, 2009 at Carnegie Mellon.

Download the PDF schedule

Click here to register!

ARTANDCODE SAT SUN MON Click to download the conference schedule (PDF)

Community Sponsors

Welcome to ART AND CODE 2009 (#artandcode)

ART AND CODE is a conference and online community focused on programming environments for artists, young people, and the rest of us. The conference took place the weekend of March 7-9, 2009 on the campus of Carnegie Mellon University in Pittsburgh, PA. It featured hands-on workshops and a symposium showcase for 11 different creative toolkits -- programming languages made by artists, for artists. If you have questions or concerns, please email Golan Levin at golan@andrew.cmu.edu.

ART AND CODE is made possible by a generous grant from Microsoft Research, with oversight by the Center for Computational Thinking at CMU. **ART AND CODE** is a project of the CMU STUDIO for Creative Inquiry, directed by Golan Levin.

Join our Facebook group!

Latest Activity

Woroud Ahdali is now a member of Art and Code — 14 hours ago
Welcome Them!

Annette Vee replied to Kyle Geske's discussion 'Introduction to Programming' in the group Educators — yesterday
"Kyle, I think that 90% of teaching isn't content or syllabus but a je ne sais quoi of personality and enthusiasm, and you're so thoughtful and smart--I'm sure whatever you teach will be great! But that's not very helpful, is it? :) If this is an..."

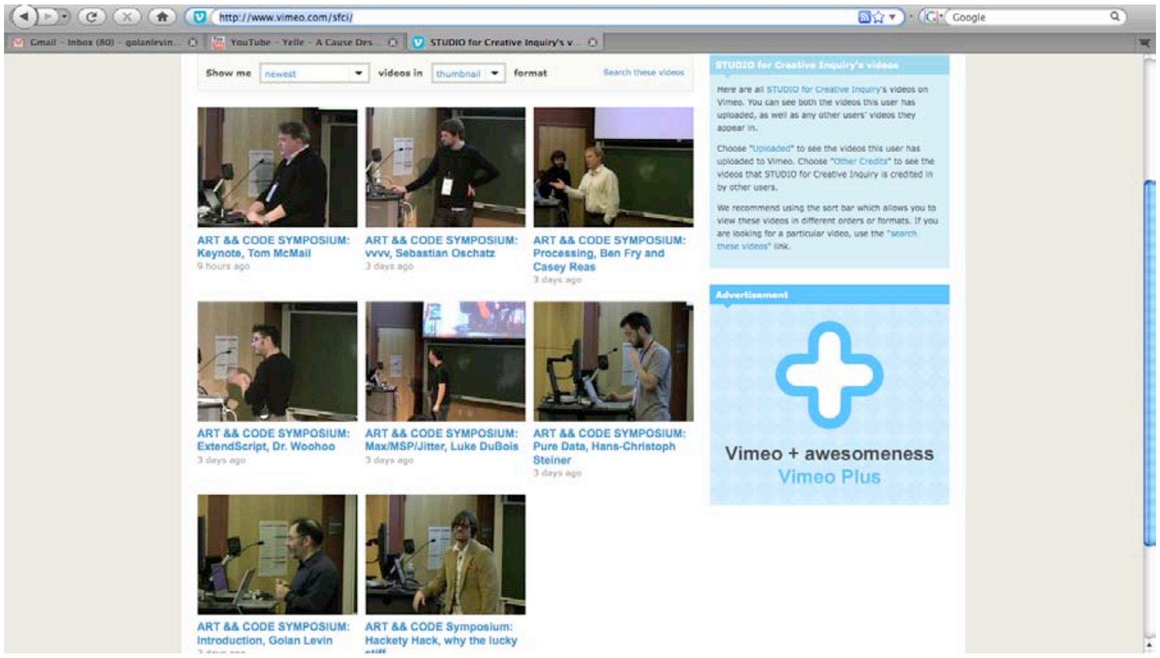
Angel Giovanni Cortes Solorzano is now a member of Art and Code — on Wednesday

Golan Levin
Sign Out
Inbox (3 new)
Friends – Invite
Settings
Quick Add...

Members
+ Invite More
View All

Groups
Educators — 31 members
Plug In / Plug Out — 4 members
Student

Complete videos of *Art && Code* lecture presentations are online at: http://www.vimeo.com/sfci/videos:


http://www.vimeo.com/sfci/
Google
Gmail - Inbox (80) - golanlevin...
YouTube - Yelle - A Cause Des...
STUDIO for Creative Inquiry's v...
Show me
newest
videos in
thumbnail
format
Search these videos

ART && CODE SYMPOSIUM: Keynote, Tom McMail — 9 hours ago

ART && CODE SYMPOSIUM: vvvv, Sebastian Oschatz — 3 days ago

ART && CODE SYMPOSIUM: Processing, Ben Fry and Casey Reas — 3 days ago

ART && CODE SYMPOSIUM: ExtendScript, Dr. Woohoo — 3 days ago

ART && CODE SYMPOSIUM: Max/MSP/Jitter, Luke DuBois — 3 days ago

ART && CODE SYMPOSIUM: Pure Data, Hans-Christoph Steiner — 3 days ago

ART && CODE SYMPOSIUM: Introduction, Golan Levin

ART && CODE Symposium: Hackety Hack, why the lucky

STUDIO for Creative Inquiry's videos

Here are all STUDIO for Creative Inquiry's videos on Vimeo. You can see both the videos this user has uploaded, as well as any other users' videos they appear in.

Choose "Uploaded" to see the videos this user has uploaded to Vimeo. Choose "Other Credits" to see the videos that STUDIO for Creative Inquiry is credited in by other users.

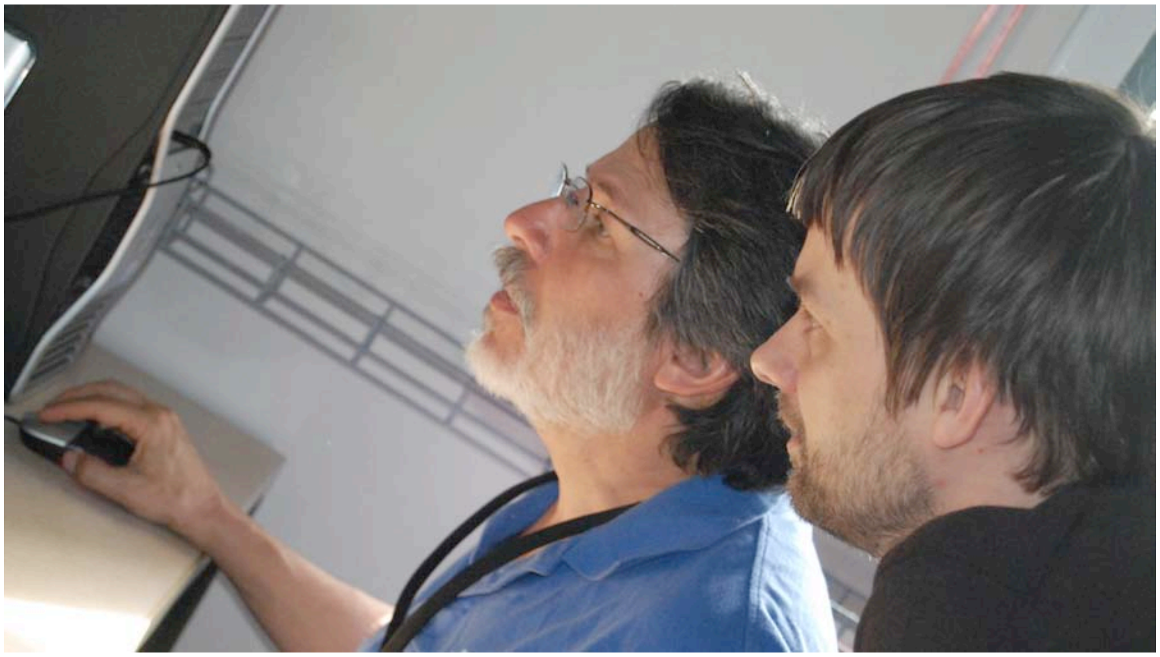
We recommend using the sort bar which allows you to view these videos in different orders or formats. If you are looking for a particular video, use the "search these videos" link.

Advertisement

Vimeo + awesomeness
Vimeo Plus

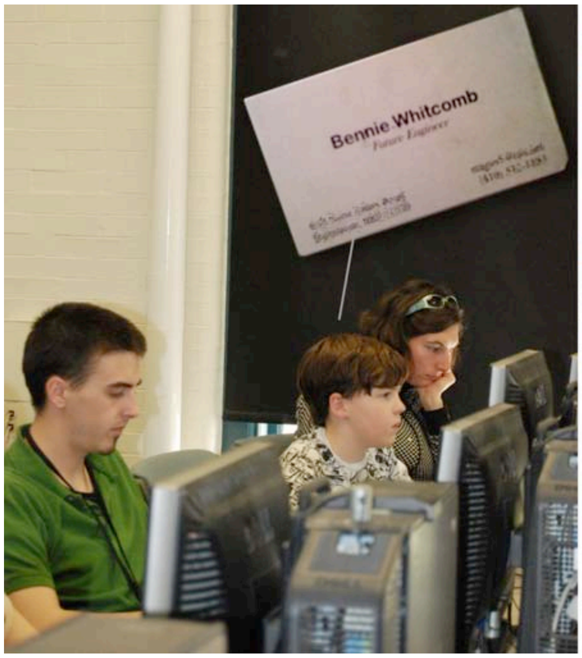
Conference Photo Documentation

Photographs from *Art && Code* Programming Workshops.



Photographs of Audience Attendance at the *Art && Code* Symposium.

Case Studies: Photographs of some individual attendees



In the middle of the left photo above is **Bennie Whitcomb**, 11, whose business card reads "Future Engineer"; Bennie travelled to Pittsburgh from Baltimore with his father (not shown). At right is the singly-named **Maa**, a computer graphics expert from France, who creates high-performance interactive audiovisual projections for corporate clients.

At left is **Jon Schull**, Associate Professor of Information Technology at Rochester Institute of Technology. At right are **Beverly Nye**, a middle-school arts teacher from McPherson, Kansas, and **Dr. Holly Pellerin,** Program Director of a science enrichment program at the Fond du Lac Native American Reservation in Minnesota.

Photographs of Some *Art && Code* Invited Presenters

Alice was originally designed to address

- Dropout rate in first year for CS majors
  - Informal surveys: 35 – 70%
  - Typically 40 – 50 %
- Percentage of women in CS is abysmal (less than 20% of BS degrees are awarded to women)
- The future demand for IT professionals is greater than the projected ability to meet that demand

Processing . . .

. . . is an open source project for people who want to program images, animation, and interactions. It is used by students, artists, designers, researchers, and hobbyists for learning, prototyping, and production. It is created to teach fundamentals of computer programming within a visual context and to serve as a software sketchbook and professional production tool.

Ben Fry, Casey Reas et al.

The presenters at the Art && Code conference. *Left to right:* John Maloney (MIT/Scratch), Golan Levin (CMU), Tom McMail (Microsoft Research), Ira Greenberg (Miami U. Ohio), Hans-Christoph Steiner (NYU/ Pure Data), Evelyn Eastmond (MIT/Scratch), Casey Reas (UCLA/Processing), Zachary Lieberman (Parsons/ openFrameworks), Theodore Watson (openFrameworks), Ben Fry (Seed Visualization Lab/Processing), Arturo Castro (openFrameworks), Sebastian Oschatz (Meso/VVVV), Daniel Shiffman (NYU), Luke DuBois (NYU/Cycling74), Dr. Woohoo (ExtendScript), Why the Lucky Stiff (Hackety Hack). Not pictured but also presenting: Don Slater (CMU/Alice), Wanda Dann (CMU/Alice). *Below*: the conference bookstore sold books by the invited presenters.

Facts and Figures about the Art && Code Conference

A total of 234 individuals participated in the Art && Code Conference.

Geographic Diversity
Conference participants, not including invited presenters, travelled from 5 different countries: Canada, the Dominican Republic, France, Norway, and the United States. Those conference participants from the USA hailed from 23 different States.

52 (22%) participants were affiliated with Carnegie Mellon University.
92 (39%) participants hailed from Pittsburgh and Allegheny County.
158 (67%) registrants came from the East Coast and/or Rust Belt States such as PA, NY, NJ, CT, MD, MA, IL, and OH.
American participants came from all corners of the United States, including Washington, California, Texas, and Florida.

Demographic Diversity
Conference participants ranged in age from 11 to 75 (self-reported). 17 participants (7%) were under 18 years of age. 35% of participants were female.

Educational Diversity
Conference participants affiliated with schools included middle-school students, high-school students, college undergraduates, graduate students, middle-school teachers, high-school teachers, and college professors of art, design, and computer science. Continuing education (Act 48) credit was given to PA schoolteachers.

Low Costs of Attendance
172 participants were paying attendees, while 62 received complementary registrations. The latter group consisted of the invited presenters, the conference organizing staff, and various Carnegie Mellon VIPs, colleagues and volunteers.

The costs of the conference registration were kept low to encourage a broad range of participation. The base conference registration fee was $15; individual three-hour workshops were $45, and ninety-minute short workshops cost $25. The average total fee paid by conference participants was $66.90, while the median was $90. The money raised from these registration fees will be used to present related Art && Code conferences and activities in the future.

Digital Online Community
The *Ning* online service was selected as the engine on which the conference website was constructed, owing to its social networking features. In early March 2009, there were more than 300 members in this community, most of whom were attending the conference in Pittsburgh; at the time of this writing (10 July 2009), this online community has grown to 509 members, and continues to get new members daily.

Twitter Posts about Art && Code

Several hundred postings were made to the micro-blogging service, **Twitter**, during and after the Art && Code conference, many of which employed the hashtag *#artandcode*. On March 8th, this hashtag briefly erupted into the "Top 10" hashtags on Twitter for that weekend. Below is a representative selection of the postings from the Art && Code conference, in reverse chronological order.

@ajstarks how does "Pure Linguistic Fluffery" compare with "Random Atonal Crap" #wolframalpha #artandcode

@chirn9980 @lorihepner i forgot to ask what did you think of #artandcode

@ryan1331 great successes today. motion detection triggering image loading. #artandcode

@der_no RT @REAS : RT @shiffman : starting a google group for "Processing Educators" (born from discussions at #artandcode). http://is.gd/nOoW

@blprnt RT @shiffman : starting a google group for "Processing Educators" (born from discussions at #artandcode). http://is.gd/nOoW

@01010101 RT @shiffman starting a google group for "Processing Educators" (born from discussions at #artandcode). http://is.gd/bLoW

@reas RT @shiffman : starting a google group for "Processing Educators" (born from discussions at #artandcode). http://is.gd/nOoW

@klondike Put up photos from #artandcode on Flickr - http://tinyurl.com/czjlhr

@bifurcations put a few #artandcode photos up, but mostly boring scenics. though @chrisrhoden , you are in a panorama http://is.gd/n0OM

@artandcode If you haven't already, search for #artandcode on Twitter: tons of tweets on Sunday's lectures. People on laptops in the audience!

@juliamae @_why & #artandcode "crew": added reunion to calendar, see y'all wednesday 07 mar 2k29 for gravity-defying space omelettes.

@schmarty Finally put all of my #artandcode photos up on Flickr. I need to make a tool for exporting from Camura to Flickr! http://is.gd/mNVV

@ajstarks @golan Thanks again for #artandcode A truly wonderful conference and experience.

@ryan1331 blog about art and code http://tinyurl.com/bvcq8q #artandcode

@schmarty I am surprised that this was not mentioned more at #artandcode: it is crazy hard to Google for information about Processing!

@ashbb RT: @golan Finally, pic of the #artandcode all-stars: http://is.gd/mI0m. Honored to bask in their glow. : Awesome!

@ecin Final message from #artandcode. Single regret: not talking to more people. Now, what to do with all this inspiration and motivation...

@golan @schmarty Here's that "Rosetta Stone" I mentioned at #artandcode: http://is.gd/mDyT ... suggests even more, no?

@golan Finally able to sit down and enjoy all these #artandcode tweets. What a great community was born!

@ashbb @schmarty Hi! I'm back home. Thx for PD pics. #artandcode was finished?

@everyplace Can barely keep my eyes open, packing for NYC. Did I think a 6AM flight was a good idea? So long, #artandcode. NJ WSJ office, here I come.

@emmet0r exhausted and inspired from another day of #artandcode ... still one more to go!

@hackpgh Just getting started this account was created to help people get more info at #artandcode

@patrickgage @schmarty Marty! thanks for all the #artandcode tweeting. i miss it! and keeping the creative community going seems like the right idea. lmk

@everyplace I have respect for photosynth and other Microsoft visual research projects, but this #artandcode presentation is stereotypically PowerPoint.

@myrddinthegeek @lorihepner @schmarty There are a group of us creating a "Hackerspace" here in Pittsburgh. People working together on projects. #artandcode

@ajstarks #artandcode keynote: A new renaissance tech, arts, computing

@myrddinthegeek Microsoft Research paid for a conference full of Macs. #artandcode

@ajstarks art != solitary_genius; art == diwo // do it with others #artandcode

@schmarty New version 006 of openFrameworks has iPhone support and man it is awesome. Example: http://is.gd/mqWb #artandcode

@myrddinthegeek OpenFramework for IPhone looks like a great way to make interactive IPhone apps. #artandcode

@ajstarks OF app was in Design and the Elastic Mind: I remember playing with it! #artandcode

@evhan55 AIR + js + Photoshop hmmm #artandcode

@ajstarks Dr. Woohoo: the world and artist have inherent color palettes (Warhol, O'Keefee, Rothko) http://inthemod.com/ #artandcode

@ajstarks Dr. Woohoo: "abusing" and extending commercial tools, along with custom apps #artandcode

@reyniel cookies! #artandcode

@schmarty "boygrouping" is more than just a clever name! The manager tells the members of the group what to do and they do it. #artandcode

@lorihepner "boygrouping" = being "n sync in programming. This is one of the best terms of the day #artandcode

@schmarty Sound as scans of a 3D landscape #artandcode - http://camura.com/p/ha5O

@ajstarks Reas demos "yellowtail", inspired by Oskar Fischinger #artandcode

@schmarty Casey Reas an Ben Fry talk Processing #artandcode - http://camura.com/p/ha5G

@evhan55 I'll never remember what FLOSS stands for #artandcode

@igierard Programing is not just or engineers, geeks, and guys #artandcode

@evhan55 time for ben and casey and processing, great! #artandcode

@schmarty @ashbb Red/green/blue lasers can be combined to do recursion - but breaching the 3-deep recursion depth means death! #kaxXxt #artandcode

@schmarty #artandcode presenter photo shoot - http://camura.com/p/ha5E

@schmarty HTML+JavaScript+CSS, obscure learning tools, "enterprise" thinking, tech wars on privacy, and more all work against new coders #artandcode

@evhan55 @schmarty thanks for the Scratch shoutouts :) #artandcode

@schmarty At yesterday's Hackety session, young Doug created a rendition of the Mario Bros. theme. Today, @_why gives him a cameo! #artandcode

@schmarty And here goes @_why with some Hackety and some general stuff #artandcode - http://camura.com/p/ha46

@ajstarks compelling programming environments increase retention of CS courses at Harvard #artandcode

@ajstarks scratch is implemented in Squeak #artandcode

@ajstarks common thread in the tools from #artandcode interactivity, tinkerability, sharability, iterative development

@ajstarks scratch http://scratch.mit.edu/ enables "tinkerability" and seems to nail the visual programming style #artandcode

@schmarty John Maloney and Evelyn Eastmond (@evhan55) show off Scratch at #artandcode - http://camura.com/p/ha44

@jfutrell Love seeing the practical, physical examples of artists using PureData. #artandcode

@dougfox #artandcode tweeps, if u happen 2 b exploring real-time motion tracking I'd be delighted 2 hear about latest developments. @JFutrell @golan

@ajstarks Pure Data at #artandcode; readers must be writers also

@evhan55 Alice 3 release date - June 2 #artandcode

@schmarty Dan Slater suggests that our grandchildren will watch us hitting beer bongs on YouTube. #artandcode

@schmarty Oooh, Alice 3 demo time. Starting with a "remake" of Pixar's "Lifted". I'm happy to finally see it (and the Sims in it). #artandcode

@evhan55 #artandcode alice presentation, so interesting! so many camera tricks to think about, this monkey demo is not so beginner friendly

@schmarty Dancing cows in Alice 2 #artandcode - http://camura.com/p/ha40

@schmarty Golan suggests that Computer Science should not have a monopoly on teaching people how to program. #artandcode

@evhan55 #artandcode syposium, golan's presentation

@schmarty Golan tells us we are slow to see the computing/culture feedback loop #artandcode - http://camura.com/p/ha4y

@schmarty Golan is almost ready to roll #artandcode - http://camura.com/p/ha4w

@jfutrell Up early to head to the #artandcode conference, not at all happy about the hour of sleep sacrificed in the name of daylight.

@mudphone http://twitpic.com/1xf6x - #artandcode _why playing a harp during the Hackety Hack workshop!!!

@bifurcations Lovely walk back to hotel (including giving a drunk crowd of strangers exuberant high fives) after an amazing day at #artandcode

@juliehache Had an AMAZING time at #artandcode with @_why and many other great gents.

@reyniel @ajstarks . Wow... Wow indeed. #artandcode

@fchu missed the shuttle for Pgh Filmmakers, because the bus left early :'-(#artandcode

@ajstarks Oskar Fischinger films WOW #artandcode

@ajstarks Waiting for the Oskar Fischinger screening at the Melwood Screening room #artandcode

@schmarty Long day at #artandcode today! @mja , I agree that Processing needs better built-in data import abilities.

@chirn9980 #artandcode is a lot of fun

@ajstarks interesting idea of using web applications to front-end API calls #artandcode

@fchu oF 006 is soo cool! !enjoyed it! #artandcode

@mattt @soldierant Discussing your awesomeness was indeed up there on my GTD lists. Now to track down @fusefactory I guess... #artandcode

@allartburns @lorihepner processing benefits from studio environment, post when you get stuck and where... #artandcode

@reyniel @latrokles . Jeremiah and Rey save the day in Visualization! x2 #artandcode

@evhan55 #artandcode day 2, so tired already! lots of fun

@schmarty Sweet Processing trick: highlight a function you don't understand and hit "Help | Find in Reference". Instant documentation! #artandcode

@schmarty A much more interesting dataset for Processing: RT @bifurcations : "Kids who are read to every day" http://twitpic.com/1wx4e #artandcode

@bifurcations *Wow* Great example of patterns emerging from list of numbers- my map: "Kids who are read to every day" http://twitpic.com/1wx4e #artandcode

@bifurcations *Wow* Great example of patterns emerging from list of numbers- my map: "Kids who are read to every day" http://twitpic.com/1wwhv #artandcode

@schmarty Yep, the diff. between state names and state abbreviations has killed half of this infovis session... bummer #artandcode

@fchu is one of the first to try openFrameworks 006 at #artandcode, yay!

@ecin Time to mess with Processing code. Particles, weee~ #artandcode

@schmarty RT @jmyint : ben fry #artandcode info here: http://benfry.com/ex/artandcode/

@jmyint ben fry #artandcode info here: http://benfry.com/ex/artandcode/

@mattt Digging into openFrameworks #artandcode

@fusefactory Looking at http://iragreenberg.com/poetess/viz01/: Word count fountain #artandcode

@fusefactory There can be a lot of similarities between teaching art and teaching computer science - both conducive to kinesthetic learning #artandcode

@schmarty Oh man, so cool! A year's worth of edits on OpenStreetMap: http://www.vimeo.com/2598878 #artandcode

@fusefactory Processing much more straightforward and direct - type in rect(50, 50, 200, 200) and boom, you get a rectangle #artandcode

@fusefactory Ira talking about how Processing is much easier to learn and use compared to Actionscript #artandcode

@schmarty Ben Fry shows us how not to visualize the Internet #artandcode - http://camura.com/p/ha1w

@joshaburto RT @schmarty : Hah! Another exciting upcoming open dataset... http://is.gd/lGcZ #artandcode

@schmarty Hah! Another exciting upcoming open dataset... http://is.gd/lGcZ #artandcode

@schmarty Fry says infovis spans computer science, math/stats/data-mining, graphic design, and HCI - 4 degrees required for success! #artandcode

@shazna Why, the lucky stiff is dapper #artandcode

@ajstarks topics: PVector, Image Processing, Live video, PHP-processing, eclipse, perlin noise... #artandcode

@ecin Onto Teaching with Processing with Ira Greenberg. #artandcode

@fusefactory Using all my willpower not to go to the book section - I'll want to buy everything. Scads of new Processing books *drool* #artandcode

@lorihepner starting to run out of gas @ #artandcode . Need more coffee! That's what I get for registering for a conference morning after art opening

@mja @schmarty Looks and sounds like #artandcode is a marvellous time.

@bryanwoods @greatseth I'm glad to get to hear so much about #artandcode . Sounds like a blast.

@schmarty Some Hackety session "Hello World" ideas: a taunting robot, fake viruses, little songs, infinite cats, Google searches #artandcode

@hackertweets greatseth: some nice people here, and a great effort, don't get me wrong.. we're hacking through it all, community style #artandcode

@igierard so hackety hack has a very cool music system #artandcode

@greatseth not great teachers in openFrameworks, four different groups all going in the same room, talking over each other :(#artandcode

@scissorjammer a horse is not a cigar at #artandcode

@schmarty Good discussion on how to remove barriers for beginning programmers in the Hackety session #artandcode

@allartburns RT @RealTimeTrends : #artandcode - is now the #9 trend on twitter. Follow here: http://idek.net/4CQ - twIRC Channel: http://idek.net/4CR

@schmarty Somebody's making mean synth music with song() in Hackety #artandcode - http://camura.com/p/ha1Z

@advee77 #artandcode: realizing I'm the only one here with a PC--running Vista, no less.

@igierard the singing CS professor #artandcode

@ashbb @schmarty Thank you so much for your #artandcode Hackety Hack pics. Cool!

@fusefactory Scratch also teaching students to understand and use the process of design and learn computational concepts #artandcode

@shazna class reminds me of when I was 8 or 9, drawing a circle on a nimbus #artandcode

@fusefactory Participants include teachers from Wisconsin, Kansas, all over PA. Instructor talking about Scratch as a gateway to C++ #artandcode

@bifurcations utter glee for any computer-related class involving an autoharp. yes. #artandcode

@igierard first program in hackety hack "01 cat". draws cat on screen #artandcode

@schmarty The third cat will be a surprise! #artandcode - http://camura.com/p/ha1P

@bwycz wishing @golan best of luck with #artandcode -- everybody have fun!

@greatseth A lovely breakfast with julia, eric, todd, chris, libbey and _why.. And now? #artandcode !!

@schmarty Waiting to register at #artandcode - http://camura.com/p/ha1F

@lshay hope the rain holds off today #artandcode

@klondike Checking into the hotel with @juliamae ahead of #artandcode here in Pittsburgh

@allartburns @lorihepner damnit, sorry I couldn't make this. Can we see your work during the film festival sat/sun? #artandcode

@boyprose Signed up for #artandcode in Pittsburgh http://artandcode.ning.com/

@eethann this is such a great idea (#artandcode): http://bit.ly/1fzpp5

Blog Reportage about Art && Code

Below is a sampling of blog reportage about the Art && Code Conference.

A weekend of Art and Code at Carnegie Mellon
By Ryan Nadel, March 10, 2009
http://ryannadel.com/2009/03/10/a-weekend-of-art-and-code-at-carnegie-mellon/

PITTSBURGH, PA – I don't know where to start. I'm sitting in the airport waiting for my flight to Chicago and then home to Vancouver. I spent the past four days in Pittsburgh for the Art and Code symposium at Carnegie Mellon University. To paraphrase the words of Golan Levin, organizer of the event and director of the STUDIO for Creative Inquiry @ CMU, the conference was a gathering to workshop and discuss programming tools designed for artists, young people, and the rest of us.

It was a conference focused on the computer as a means for creativity as apposed to simple utility, evolving the computer from efficient tool to artistic medium.

Presenting at the conference were the thought leaders of this vibrant community. The founding developers of Processing, openFrameworks, VVVV, Hackety Hack, Alice, and Scratch along with leading educators and researchers taught workshops and presented their platforms.

I attended the ActionScript workshop by Ira Greenberg, the author of Creative Computer Coding, Daniel Shiffman's Advanced Processing Workshop, and"hello world" workshops for openFrameworks and PureData. It was intense and exhilarating and exhausting and profoundly inspiring.

Emphasis throughout was placed on computer literacy as apposed to simply computer proficiency. Just as literacy in the context of language does not simply mean that a person can speak but that they can read and write – express themselves. So too, computer literacy should mean that we don't just know how to use the computer to get things done but to create software and control it. To use the computer as a means in fulfilling the will to self-expression, no different than using language to write. With that mindset, there was a persistent distinction between computer science and programming and the importance of breaking down the barrier to programming amongst non-computer scientists.

Personally, I owe Daniel Shiffman a beer or two for the work that he has done to break down that barrier. It was his book, Learning Processing, that I devoutly pored over during winter break, only a couple of months ago; it gave me the confidence to tackle programming and break down the barrier 'line of code by line of code'.

Other than the obvious rough and tumble technical learning that comes from intense workshops, the most valuable take away was the sense of community and passion that percolated throughout the weekend. Nothing exemplifies this more than the fact that the majority of the platforms are entirely opensource and non-commercial. It is this spirit of openness and collaboration and sharing which is the foundation of creation and innovation in this field. The essence is synthesis; the synthesis of the artistic and the technical in both mindset and form.

Unlike the capitalist market place where IP and privacy are the foundations of innovation, in this atmosphere it felt like people were competing for openness. The more they give away the taller they stand.

This shift in perspective owes itself to a few factors. Firstly, the development of many of these tools comes from the academic world, namely MIT, NYU and CMU. It is within the academic environment that developers are released from corporate expectation and are encouraged to freely disseminate their programs.

Additionally, these toolkits are developed by small core groups of people. Processing was developed by a team of two, Ben Fry and Casey Reas, of hundreds of developers, making the process cheaper and more sustainable.

But, most central to the success of these endevours are the communities that have evolved around them. Hundreds of people, all volunteers, write libraries to extend the features of these programs, answer questions in forums and share their code with others. And the true success of these platforms lies not in the technology, per say, but the communities they built and foster.

At a closing panel on the development of new tools, Zachary Lieberman, a founding developer of openFrameworks, stressed the importance and necessity of social interaction in the development of these platforms and in education. in the openFrameworks community, social gathering in computing manifests in the organization of programming 'knitting circles' where people get together and jam with code.

On Sunday night we held a conference specific 'open mic -Dorkbot – Pecha Kucha' hybrid where people presented their various projects and experiments. I took the mic and proudly shared one of our projects from last semester, Fluxus – the art of conversation; I not only demoed the virtual conversation space we designed, but also showed some photos from the Midforms Festival where Fluxus was on display. My final slide captured two avatars inside each other creating art; the perfect image to represent my experience at Art and Code where 200 people from all over the world got together to talk about creating art with code and the art of coding. I eagerly anticipate next year.

Art and Code Wrap-Up
From the blog of Dr. WooHoo, March 11th 2009
http://blog.drwoohoo.com/?p=797

I am still in state of inspirational shock after the incredible Art and Code conference that Golan put on this past weekend at Carnegie Mellon. The toolkits people are using for creating artwork is simply amazing. If you have a chance, please check out any of the following:

Alice
Hackety Hack
Max/MSP/Jitter
openFrameworks
Processing
Pure Data
Scratch
VVVV

Art and Code at CMU
11 March 2009
http://thefactoryfactory.com/wordpress/?p=546

I spent this last weekend down in Pittsburgh at the Art and Code conference and found myself excited about all manner of things once again. This was a symposium and online community focused on programming environments for artists, young people, designers, and hackerish types of all stripes. It featured tutorials on PureData, openFrameworks, Processing, Hackety-Hack, Max/MSP, Scratch, and some other stuff. There were presentations, and a Dorkbot presentation that had probably the most inspiring thing I've seen in a little while by Hans Christoph-Steiner on the reware project. He also gave a really great Pure Data demo.

Closer to home, for me at least, the oF crew launched oF 006. I got to meet Todd Vanderlin, Casey Reas, and a bunch of very interesting other artists, designers, geeky types of many stripes, and generally feel the love. I was really happy to see how many people knew about and were excited about Programming Interactivity, which got me triply motivated to make sure it's up to the standard of these projects.

Ctrl+B For Concurrency
By _why, March 13th 18:23
http://hackety.org/2009/03/13/ctrlB.html

I've walked away from ART & CODE in Pittsburgh with a pile of new hackers to idolize. Krikey, the things these artists are doing while everyone else is rewording their unit tests and staring at the TIOBE index. My mind has been shredded into wispy, semi-autonomous ribbons.

One profound change of mind for me is this: I haven't given visual languages a fair shake. These languages (such as Max/MSP and vvvv) aren't just good languages. To watch someone code fluently on a canvas just looks completely natural. And, particularly in the case of vvvv, you have a language which moves effortlessly between visual and textual. (I'll cover that more next week.)

vvvv defies so much of the usual criterion. The thing runs only on Windows and is written in Delphi. For scripting, it embeds a language called HLSL. (Who really cares, though. No one's going to put away Zelda if we ever found out it had some Visual Basic in it.) Sebastian wasn't apologetic of Delphi, he doesn't seem to know bout the language wars, and I was more than happy to forego the opinions.

Yes, that's Sebastian Oschatz in the green scarf. He is normally joined by Max Wolf, Sebastian Gregor and Joreg, who comprise the rest of the vvvv team. As you can clearly see, he's a nice, gentle fellow who believes in visual coding and kept needling me all weekend to cross over to their side.

ARTANDCODE

programming environments for artists, young people & the rest of us

7-9 march, 2009

carnegie mellon
pittsburgh, pa

sponsored by

Microsoft Research

Center for Computational Thinking
Carnegie Mellon

STUDIO for Creative Inquiry

Saturday, March 7

Half-Day Workshops

The main meeting place for ART AND CODE is the Lounge outside the Giant Eagle Auditorium, located on the first floor of Baker Hall (Baker-GE). Directional signs will be posted at the building's main entrance.

9-10am	LOUNGE	REGISTRATION & BREAKFAST *Coffee and tea will be available in the lounge all day.*
10am-1pm	**BAKER-140F**	**Patient Intro to Processing, Part 1**(Reas)
	CFA-318	**Intro to Flash Programming with Actionscript** (Greenberg)
	WEAN-5201	**Brisk Intro to Processing** (Shiffman)
	WEAN-5202	**Information Visualization with Processing** (Fry)
	CFA-323	**Audio & MIDI with Max/MSP** (DuBois)
	CFA-303	**openFrameworks** (Lieberman, Watson & Castro)
	CFA-310	**Hijacking Photoshop & Illustrator with Extendscript** (Woohoo)
	BAKER-140E	**Teaching with Scratch** (Eastmond)
	BAKER-140C	**Drawing Cats with Hackety Hack** (Why)
1-2pm	LOUNGE	LUNCH & BOOK SALE *Authors will sign books at 1:30*
2-5pm	**BAKER-140F**	**Patient Intro to Processing, Part 2** (Reas)
	CFA-318	**Teaching with Processing** (Greenberg)
	WEAN-5201	**Processing: Advanced Applications** (Shiffman)
	WEAN-5202	**Information Visualization with Processing** (Fry)
	CFA-323	**Video & Graphics with Max/MSP/Jitter** (DuBois)
	CFA-303	**openFrameworks** (Lieberman, Watson & Castro)
	CFA-317	**Intro to VVVV** (Oschatz)
	CFA-310	**Intro to Silverlight** (Brown)
	BAKER-140C	**Scratch for Young People** (Maloney & Eastmond)
	BAKER-140E	**Play Games with Hackety Hack** (_Why)
5:30-7:30pm	LOUNGE	OPENING RECEPTION *Shuttle buses will depart Frew St at 7:10 and 7:35 to take you to the Oskar Fischinger film festival.*
8-9:10pm	Pittsburgh Filmmakers	OSKAR FISCHINGER FILM FESTIVAL *Free admission with your conference badge. Shuttle buses will be available at 9:15 and 9:50 to return you to campus and hotels.*

CODE and FORM EXHIBIT
Free admission with your conference badge
Pittsburgh Center for the Arts, Saturday,10am-5pm

DAYLIGHT SAVINGS REMINDER:

Daylight Savings Time starts *tomorrow* (Sunday, March 8.)
Set your clocks ahead 1 hour before you go to bed tonight.

Sunday, March 8

Presentations

8-8:45am	LOUNGE	REGISTRATION & BREAKFAST *Coffee and tea will be available in the lounge all day.*
8:45-9am	**BAKER-GE**	**Opening Remarks** (Levin)
9-9:45am	**BAKER-GE**	**Alice** (Slater)
9:45-10:30am	**BAKER-GE**	**Silverlight** (Brown)
10:30-11:15am	**BAKER-GE**	**Scratch** (Maloney & Eastmond)
11:15-12:00pm	**BAKER-GE**	**Hackety Hack** (_Why)
noon-1pm	LOUNGE	LUNCH & BOOK SALE
1-1:45pm	**BAKER-GE**	**Processing** (Fry & Reas)
1:45-2:30pm	**BAKER-GE**	**Max/MSP/Jitter** (DuBois)
2:30-3:15pm	**BAKER-GE**	**VVVV** (Oschatz)
3:15-3:30pm	LOUNGE	COOKIE BREAK
3:30-4:15pm	**BAKER-GE**	**AIR & Extendscript** (Woohoo)
4:15-5pm	**BAKER-GE**	**openFrameworks** (Lieberman, Watson & Castro)
5-5:45pm	**BAKER-GE**	**Keynote Lecture** (McMail)
7:10pm	FREW ST	*Shuttle buses will depart Frew St at 7:10 and 7:35 to take you to brillobox and the Oskar Fischinger film festival*
7:30pm-1am	brillobox	Open-mic Dorkbot *Shuttle buses will be available at 10, 11, 12 and 1 to return you to campus and hotels*
8-9:10pm	Pittsburgh Filmmakers	OSKAR FISCHINGER FILM FESTIVAL *Free admission with your conference badge. Shuttle buses will be available at 9:15 and 9:50 to take you to brillobox, campus and hotels.*

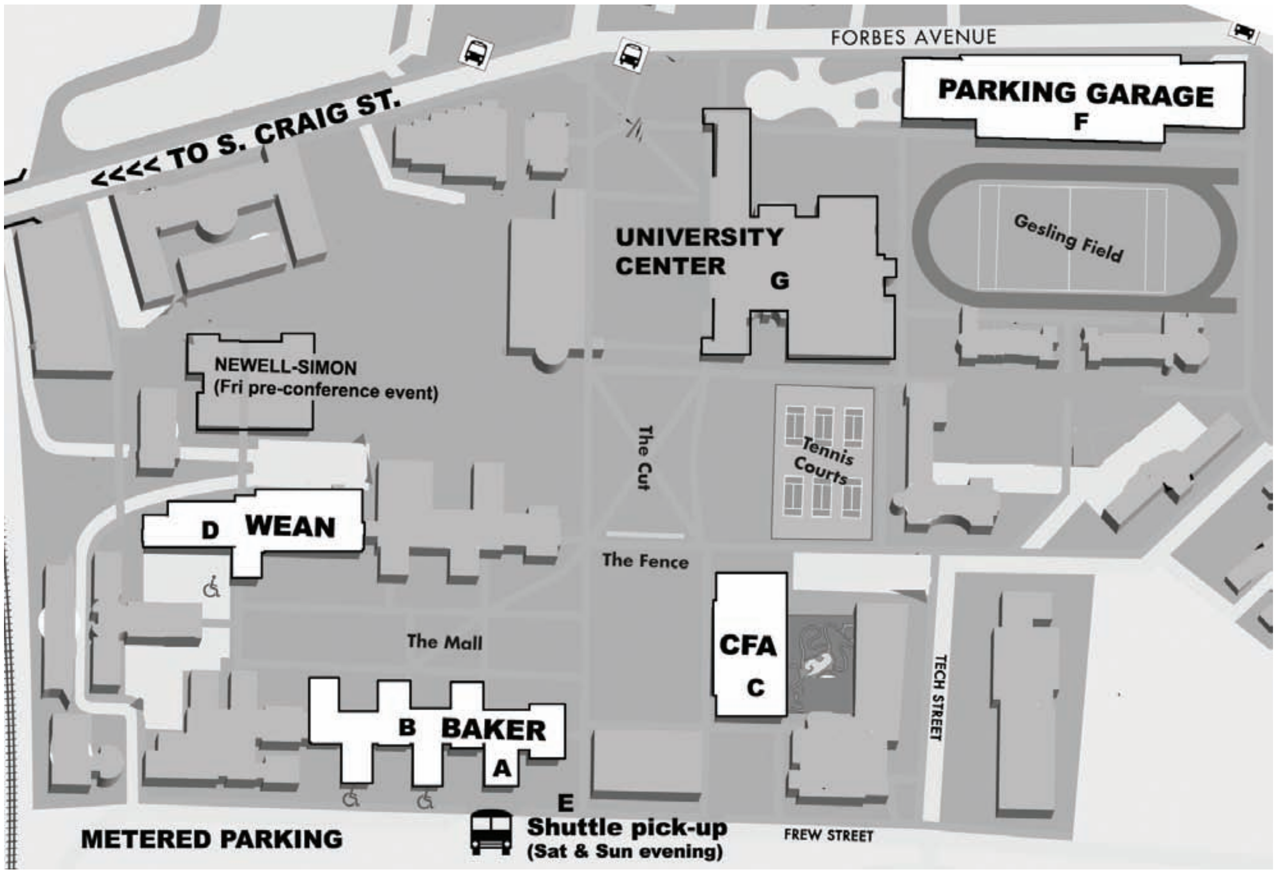
CODE and FORM EXHIBIT
Free admission with your conference badge
Pittsburgh Center for the Arts, Sunday, noon-5pm

Monday, March 9

Short Workshops & Panels

8-9am	LOUNGE	BREAKFAST *Coffee and tea will be available in the lounge all day.*
9-10:20am	**BAKER-140C/E**	**Alice: Intro to Programming** (Dann & Slater)
	CFA-318	**Getting Started with VVVV** (Oschatz)
	CFA-317	**Getting Started with Processing** (Greenberg)
	CFA-303	**Pure Data Demo** (Steiner)
10:30-noon	**CFA-303**	**Getting Started with openFrameworks** (Lieberman, Watson & Castro)
	BAKER-140F	**Getting Started with Scratch** (Maloney & Eastmond)
	CFA-318	**Getting Started with Processing** (Shiffman)
	CFA-310	**Getting Started with Extendscript** (Woohoo)
noon-1pm	LOUNGE	LUNCH
1-1:30pm	**BAKER-GE**	**Developing New Tools** (panel)
1:30-2pm	**BAKER-GE**	**Educating in New Ways** (panel)

Campus Map



Walking time from the garage to Baker Hall is 5-10 minutes.

(A) Giant Eagle Auditorium & Main Lounge Area (in Baker Hall)
(B) Baker Hall workshop rooms (140C, 140E and 140F)
(C) CFA workshop rooms (303, 310, 317, 318, 323)
(D) Wean Hall workshop rooms (5201, 5202)
(E) Shuttle pickup area (outside main entrance of Baker Hall, along Frew Street)
(F) East Campus Garage
(G) University Center:
- ATMs
- Skibo Cafe (Coffeehouse): Sat 10am-6pm, Sun 10am-6pm, Mon 9am-3pm.
- Entropy+ (Convenience Store): Sat 12-6pm; Sun 12-6pm; Mon 7:30am-6pm.
- Si Senor (Tex/Mex Fast Food): Sat 10am-6pm, Sun 10am-6pm, Mon 11am-2pm.

Please note, Carnegie Mellon is on Spring break this weekend, so many campus facilities are closed. A wide variety of restaurants, cafes and bars are located on S. Craig Street, just two blocks from campus.

Pittsburgh Map

For an interactive Google map with walking and driving directions to hotels, restaurants, bars, galleries and other attractions, please see the conference website:

ARTANDCODE.NING.COM

Motivation

"ART AND CODE is the software wing of the DIY movement."
-- Tom McMail, *Microsoft Research*

Just as true literacy in English means being able to write as well as read, true literacy in software demands not only knowing how to use commercial software tools, but how to create new software for oneself and for others. Today, everyday people are still woefully limited in their ability to create their own software. Many would like to create their own programs and interactive artworks, but fear that programming is “too hard.” The problem, it turns out, may not be programming itself so much as the ways in which it is conventionally taught.

Recently, a number of projects dedicated to democratizing the education of computational thinking have coalesced. Emerging primarily from the arts sector, a set of new programming tools (and accompanying pedagogic techniques) have been developed **by artists, and for artists,** to help regular folks and other non-computer-scientists learn to make software. Using visual and musical expression as the "hook", thousands of people have not only learned to code using these new environments, but found new reasons to code in the first place. These toolkits – many of which are free, open-source initiatives – have made enormous inroads towards expanding the computational skills and interests of hundreds of thousands of creative people worldwide. You too can join this movement!

This conference is for:

- Artists, designers and musicians who want to create interactive art, information visualization, or personal software tools;
- Teens, undergraduates, and graduate students who wish to combine art, design, interaction, and computer science;
- Middle-school and high-school teachers who want a more expressive way of teaching programming and computer arts;
- College educators and professional artists who want to learn the most cutting-edge tools for interaction design;
- Computer-science education researchers interested in visually-oriented learning tools;
- Anyone who has been wanting to learn how to program their own software, but hasn't known where to start!

-- Golan Levin, *ART AND CODE Conference Organizer*
<golan@andrew.cmu.edu>

Tools & Workshops

ActionScript

www.adobe.com/devnet/actionscript
Presented by Ira Greenberg (Author, *Processing for Flash Developers*)

Actionscript is the programming language used in Adobe's popular Flash authoring tool. Originally created as a way for developers to program interactivity in the Flash Player, ActionScript enables efficient programming of Adobe Flash applications for everything from simple animations to complex, data-rich, interactive application interfaces.

Alice

www.alice.org
Presented by Don Slater and Wanda Dann

Alice is an innovative 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game, or a video to share on the web. Alice is a freely available teaching tool designed to be a student's first exposure to object-oriented programming. It allows students to learn fundamental programming concepts in the context of creating animated movies and simple video games. In Alice, 3-D objects (e.g., people, animals, and vehicles) populate a virtual world and students create a program to animate the objects.

In Alice's interactive interface, students drag and drop graphic tiles to create a program, where the instructions correspond to standard statements in a production oriented programming language, such as Java, C++, and C#. Alice allows students to immediately see how their animation programs run, enabling them to easily understand the relationship between the programming statements and the behavior of objects in their animation. By manipulating the objects in their virtual world, students gain experience with all the programming constructs typically taught in an introductory programming course.

ExtendScript

seminars.adobe.acrobat.com/p51382259/
Presented by Dr. Woohoo

Did you know that you can write scripts to control Photoshop? To automate Illustrator? to abuse AfterEffects? You can with ExtendScript, Adobe's implementation of JavaScript. It is used by all Adobe Creative Suite applications that support a JavaScript interface.

Hackety Hack
hacketyhack.net
Presented by why the lucky stiff

Hackety Hack is a free Ruby-based environment which aims to make programming easily available to beginners, especially teenagers. Its motivation was an essay entitled The Little Coder's Predicament, written in 2003 by a fellow called (Mr.) why the lucky stiff, which argued that programming isn't as readily available as it was in the days of the Commodore 64, and that something should be done about it to help beginners tinker with their computers.

One of Hackety Hack's sincere pledges is to make the most common code very easy and short. Downloading an MP3 can be done in one line of code. Making a blog takes about 6 lines. Constructing your own Instant Messaging system takes about twice that. Presently, Ruby is the only language taught by Hackety Hack. And it's a great one to start with.

All of this, the whole of it, is totally free to you. My wish is to spread infectious hacking smarts all over the world. And so Hackety Hack is yours forever at no cost: give it away, take it apart, learn-learn-learn without a second thought.

Max/MSP/Jitter
www.cycling74.com/downloads/max5
Presented by Luke DuBois

Max/MSP/Jitter is an interactive graphical programming environment for music, audio, and media. For over two decades, people have been using Max/MSP/Jitter to make their computers do things that reflect their individual ideas and dreams. Compatible with Mac and Windows, Max/MSP/Jitter provides true cross-platform authoring and a free runtime version.

Max/MSP/Jitter is three things:

1. Max, a graphical programming environment that provides user interface, timing, communications, and MIDI support;
2. MSP, for real-time audio synthesis and digital signal processing;
3. Jitter, for video and matrix data processing.

Max/MSP/Jitter is a common framework in which artists and researchers from varied disciplines can collaborate and cross-pollinate, building upon their respective specialties, all within the same flexible architecture. Recent artistic and research projects that have used Max/MSP/Jitter range from evolutionary systems for generating video filters to a computer controlled paint gun printer, and from music driven by the movement of ballet dancers to a robotic labyrinth that changes form as the participant walks through it.

openFrameworks

www.openframeworks.cc
Presented by Zachary Lieberman, Theodore Watson, and Arturo Castro

Especially created for artists and designers, openFrameworks is the ideal starting point for those who want to take their first steps in C++ programming. At the same time, it is an immensely powerful tool for developing more advanced projects, providing a simple and intuitive structure for experimentation with many other open-source libraries.

The openFrameworks library is open-source, designed to work as a general purpose glue in order to wrap together several commonly-used open source libraries within a tidy interface: openGL for graphics, openCV for computer vision, rtAudio for audio analysis and synthesis, freeType for fonts, freeImage for image input and output, Quicktime for video playing and sequence grabbing, and many other free libaries for networking, serial communications, vector graphics output, etcetera.

The code is written to be both cross platform and cross compiler. It works in Mac, Windows and Linux operating systems -- and it compiles in readily-downloadable template projects for the free XCode, CodeBlocks, VisualStudio, and gcc compilers. The API is designed to be minimal and easy to grasp. There are very few classes, and inside of those classes, there are very few functions. The code has been implemented so that within the classes there is minimal cross-referening, making it quite easy to rip out and reuse, if you need, or to extend.

Processing

processing.org
Presented by Casey Reas, Ben Fry, Ira Greenberg, and Daniel Shiffman

Processing is an open-source programming language, development environment, and online community that since 2001 has promoted software literacy within the visual arts. Initially created to serve as a software sketchbook and to teach fundamentals of computer programming within a visual context, Processing quickly developed into a tool for creating finished professional work as well. It is used by students, artists, designers, researchers, and hobbyists for learning, prototyping, and production. It is created to teach fundamentals of computer programming within a visual context and to serve as a software sketchbook and professional production tool for programming images, animation, and interactions.

Processing is a free alternative to proprietary software tools with expensive licenses, making it accessible to schools and individual students. Its open-source status encourages the community participation and collaboration that is vital to its growth. Contributors share programs, contribute code, answer questions in the discussion forum, and build libraries to extend the possibilities of the software. The Processing community has written over seventy libraries to facilitate computer vision, data visualization, music, networking, and electronics.

The Processing software runs on the Mac, Windows, and GNU/Linux platforms. With the click of a button, it exports applets for the Web or standalone applications for Mac, Windows, and GNU/Linux. Graphics from Processing programs may also be exported as PDF, DXF, or TIFF files and many other file formats.

Processing was founded by Ben Fry and Casey Reas in 2001 while both were John Maeda's students at the MIT Media Lab. Since that time, Processing has received many significant awards and recognitions. The Cooper-Hewitt National Design Museum (a Smithsonian Institution) included Processing in its National Design Triennial. Works created with Processing were featured prominently in the Design and the Elastic Mind show at the Museum of Modern Art. Numerous design magazines, including Print, Eye, and Creativity, have highlighted the software. For their work on Processing, Fry and Reas received the 2008 Muriel Cooper Prize from the Design Management Institute. The Processing community was awarded the 2005 Prix Ars Electronica Golden Nica award and the 2005 Interactive Design Prize from the Tokyo Type Director's Club.

Pure Data
puredata.info
Presented by Hans-Christoph Steiner

Pd (aka Pure Data) is a real-time graphical programming environment for audio, video, and graphical processing. It is the third major branch of the family of patcher programming languages known as Max (Max/FTS, ISPW Max, Max/MSP, jMax, etc.) originally developed by Miller Puckette and company at IRCAM. The core of Pd is written and maintained by Miller Puckette and includes the work of many developers, making the whole package very much a community effort.

Pd was created to explore ideas of how to further refine the Max paradigm with the core ideas of allowing data to be treated in a more open-ended way and opening it up to applications outside of audio and MIDI, such as graphics and video.

It is easy to extend Pd by writing object classes ("externals") or patches ("abstractions"). The work of many developers is already available as part of the standard Pd packages and the Pd developer community is growing rapidly. Recent developments include a system of abstractions for building performance environments; a library of objects for physical modeling; and a library of objects for generating and processing video in realtime.

Pd is free software and can be downloaded either as an OS-specific package, source package, or directly from CVS. Pd was written to be multi-platform and therefore is quite portable; versions exist for Win32, IRIX, GNU/Linux, BSD, and MacOS X running on anything from a PocketPC to an old Mac to a brand new PC. It is possible to write externals and patches that work with Max/MSP and Pd using flext and cyclone.

Scratch
scratch.mit.edu
Presented by John Maloney and Evelyn Eastmond

Scratch is a new graphical-programming environment that enables young people (ages 8 and up) to create their own interactive stories, games, and animations - and share their creations on the web. Scratch is designed to make programming more tinkerable, more meaningful, and more social. Since Scratch was launched in May 2007, more than 300,000 projects have been shared on the Scratch website, which has been called "the YouTube of interactive media." As young people create and share Scratch projects, they learn to think creatively, reason systematically, and work collaboratively. Scratch is a project of the Lifelong Kindergarten group at the MIT Media Lab, directed by the distinguished educational researcher, Mitchel Resnick.

Scratch aims to broaden the audience for computer programming by making programming:

* More tinkerable. To create programs in Scratch, you simply snap graphical blocks together into stacks. The blocks are designed to fit together only in ways that make syntactic sense, so there are no syntax errors. Different data types have different shapes, eliminating type mismatches. You can make changes to stacks even as programs are running, so it is easy to experiment with new ideas incrementally and iteratively.
* More meaningful. We designed Scratch to support a wide range of different types of projects, so that people with diverse backgrounds and interests can all work on personally-meaningful projects. In particular, Scratch enables people to programmatically control graphics, animations, music, and sound, extending the media-manipulation activities that are popular in today's youth culture.
* More social. Scratch makes it easy to share projects on the web – and remix projects created by others. On the Scratch website, members are constantly borrowing and building upon one another's ideas, images, and programs. More than 15% of the projects on the website are modified versions of other projects on the site.

Silverlight
www.microsoft.com/SILVERLIGHT/
Presented by DeVaris Brown

Microsoft Silverlight is a programmable web browser plugin that enables features such as animation, vector graphics and audio-video playback that characterise rich Internet applications. Version 2.0, released October 2008, brings additional interactivity features and support for .NET languages and development tools. It is compatible with multiple web browser products used on Microsoft Windows and Mac OS X operating systems. Mobile devices, starting with Windows Mobile 6 and Symbian (Series 60) phones, will also be supported.

VVVV

vvvv.org
Presented by Sebastian Oschatz

VVVV is a toolkit for real time video synthesis -- and a graphical programming language which allows you to draw a program while it is running. It is designed to facilitate the handling of large media environments with physical interfaces, real-time motion graphics, audio and video that can interact with many users simultaneously. VVVV uses a “visual programming” interface, wherein user programs are created by connecting various function blocks by “wires”. In this way, VVVV provides a graphical programming language for easy prototyping and development.

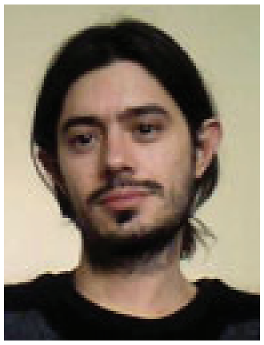
VVVV is real time. Whereas many other languages have distinct modes for building and running programs, VVVV only has one mode -- runtime. Write code and see the results simultaneously!

Other key features of VVVV include:
• Effortless handling of multiple objects
• Seamless multi-projection setups
• DirectX-based 3D rendering
• Realtime programming of HLSL shaders, directly on the graphics card
• Interfacing with a wide variety of external devices and protocols, including UDP, TCP, RS232, OSC, MIDI, DMX, HTTP and plugin standards like VST and FreeFrame.

Presenters

DeVaris Brown is the Academic Relations Manager for the Heartland Region of Microsoft Corporation. DeVaris has been with Microsoft since August of 2006, first serving as a Systems Engineer within the Windows Live Operations group. In this role, he was responsible for creating automation for the largest installation of Windows/SQL Server and coding libraries for the Hotmail division of Windows Live.
In his current role, DeVaris travels throughout the Heartland Region of the United States, building relationships with students and faculty to increase awareness about Microsoft products, such as Silverlight, and to get people excited about technology.

DeVaris received his BS in 2006 from the University of Illinois at Urbana Champaign, with a double major in Math and Computer Science and a minor in Management Information Systems. He is a recognized expert in the fields of intrusion detection, high performance computing, and virtualization. During his college years he interned with Intel, IBM, and Cisco. Currently he is a member of ACM, IEEE, and the National Society of Black Engineers.



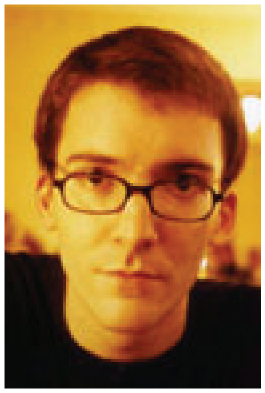
Arturo Castro is currently based in Barcelona. He studied computer science and has collaborated in several creative projects since 2004. Arturo works with Zachary Lieberman and Theodore Watson on the development of openFrameworks. He is the maintainer of the Linux version and leads the openFrameworks working group at Hangar (Barcelona).

Dr. Wanda Dann, an active member of the Alice team for the last decade, has recently assumed leadership of the team. She is currently transitioning into a faculty position at Carnegie Mellon University from Associate Professor of Computer Science at Ithaca College. Wanda's research interests include visualization in programming and programming languages and innovative approaches to introductory programming.

With Dr. Steve Cooper and Dr. Randy Pausch, she has published papers on the use of program visualization in teaching and learning introductory programming. Papers have appeared in ACM's Special Interest Group on Computer Science Education (SIGCSE) inroads, the Computer Science Education Journal, and other related publications. She is co-author of Learning to Program with Alice (2006, Prentice-Hall).

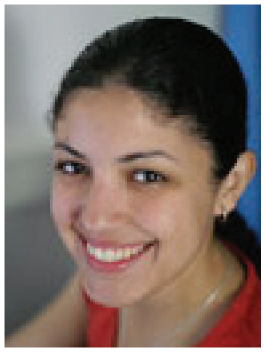
Dr. Dann's leadership as a computer science educator has been recognized in her various roles as SIGCSE Technical Symposium publications editor, special projects chair, program chair, and symposium chair. She is now a member of the SIGCSE Board.

R. Luke DuBois is a composer, artist, and performer who explores the temporal, verbal, and visual structures of cultural and personal ephemera. He holds a doctorate in music composition from Columbia University, and has lectured and taught worldwide on interactive sound and video performance. He has collaborated on interactive performance, installation, and music production work with many artists and organizations including Toni Dove, Matthew Ritchie, Todd Reynolds, Michael Joaquin Grey, Elliott Sharp, Michael Gordon, Bang on a Can, Engine27, Harvestworks, and LEMUR, and was the director of the Princeton Laptop Orchestra for its 2007 season.



An active visual and musical collaborator, DuBois is the co-author of Jitter, a software suite for the real-time manipulation of matrix data. He appears on nearly twenty-five albums both individually and as part of the avant-garde electronic group The Freight Elevator Quartet. He currently performs as part of Bioluminescence, a duo with vocalist Lesley Flanigan that explores the modality of the human voice, and in Fair Use, a trio with Zach Layton and Matthew Ostrowski, that looks at our accelerating culture through elecronic performance and remixing of cinema.

DuBois has lived for the last fifteen years in New York City. He teaches at the Brooklyn Experimental Media Center at NYU's Polytechnic Institute. His records are available on Caipirinha/Sire, Liquid Sky, C74, and Cantaloupe Music. His artwork is represented by bitforms gallery in New York City. DuBois holds both a bachelor's and a doctorate in music composition from Columbia University, and is a staff researcher at Columbia's Computer Music Center.

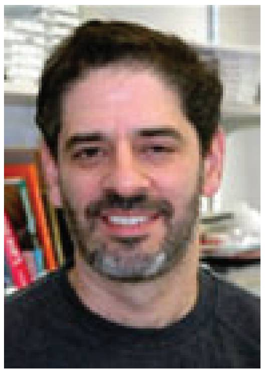


Evelyn Eastmond has been a member of the Scratch team in the Lifelong Kindergarten group at the MIT Media Lab for six years: first as an undergraduate researcher, then graduating with an MEng in Computer Science and now working fulltime as a developer for Scratch, splitting her time between her home in Madison, WI and the MIT Media Lab in Cambridge. She continues to learn and grow as Scratch itself evolves and is excited to connect with Scratch and *art and code* enthusiasts from all corners of the world. Evelyn is currently teaching herself Flex, Processing and other cool things.

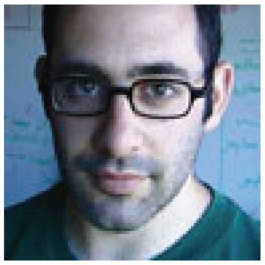
Ben Fry received his doctoral degree from the Aesthetics + Computation Group at the MIT Media Laboratory, where his research focused on combining fields such as Computer Science, Statistics, Graphic Design, and Data Visualization as a means for understanding complex data. After completing his thesis, he spent time developing tools for visualization of genetic data as a postdoc with Eric Lander at the Eli & Edythe L. Broad Insitute of MIT & Harvard. During the 2006-2007 school year, Ben was the Nierenberg Chair of Design for the the Carnegie Mellon School of Design. At the end of 2007, he finished the book Visualizing Data for O'Reilly. He currently works as a designer in Cambridge, MA.

With Casey Reas of UCLA, he currently develops Processing, an open source programming environment for teaching computational design and sketching interactive media software that won a Golden Nica from the Prix Ars Electronica in 2005.

In 2006, Fry received a New Media Fellowship from the Rockefeller Foundation to support the project. Processing was also featured in the 2006 Cooper-Hewitt Design Triennial. In 2007, Reas and Fry published Processing: A Programming Handbook for Visual Designers and Artists with MIT Press.

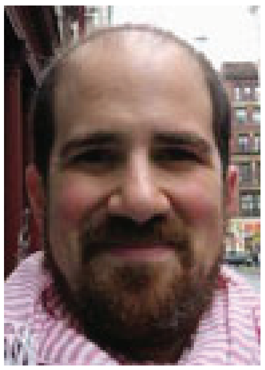


Ira Greenberg is an associate professor at Miami University of Ohio, with a joint appointment in the Department of Art and the Armstrong Institute for Interactive Media Studies. He is also an affiliate faculty member of the Department of Computer Science and Systems Analysis. His research interests include aesthetics and computation, expressive programming, emergent forms, net-based art, and computer art pedagogy. During the last few years, he has been torturing defenseless art students with trigonometry, algorithms, and object-oriented programming and is excited to spread this passion to the rest of the world. He is the author of Processing: Creative Coding and Computational Art, Friends of Ed, 2007 and the upcoming Processing for Flash Developers, Friends of Ed, (summer, 2009).



Golan Levin is Director of the STUDIO for Creative Inquiry and Associate Professor of Electronic Art at Carnegie Mellon University, where he also holds courtesy appointments in the School of Design and the School of Computer Science. Golan is the organizer of the Art and Code Conference.

Golan's pedagogy is concerned with reclaiming computation as a personal medium of expression. To that end, his courses are designed to give students the confidence to program their own software creations from first principles. His studio classes focus on significant themes in contemporary electronic media arts, such as interaction design, computational form generation, information visualization, and audiovisual performance. These function as "studio art courses in computer science," in which the objective is to produce personally and socially relevant expressions, but the medium is software created by the students themselves. Golan's own work investigates formal languages for visualization and interactivity in cybernetic systems. He is known for the conception and creation of Telesymphony, a concert whose sounds are wholly performed through the carefully choreographed ringing of the audience's own mobile phones, and for interactive information visualizations like Secret Lives of Numbers and Dumpster, which offer novel perspectives onto millions of online communications. Golan has exhibited and performed widely in Europe, America and Asia.



Zachary Lieberman's work uses technology in a playful and enigmatic way to explore the nature of communication and the delicate boundary between the visible and the invisible. He creates performances, installations, and on-line works that investigate gestural input, augmentation of the body, and kinetic response.

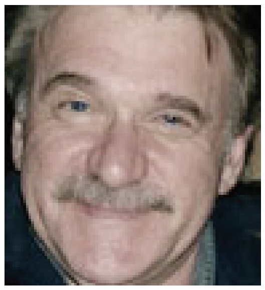
Working with collaborator Golan Levin, he has created a series of installations - "Remark" and "Hidden Worlds" - which presented different interpretations of what the voice might look like if we could see our own speech. These were followed with "Messa Di Voce," a concert performance in which the speech, shouts and songs of two abstract vocalists were radically augmented in real-time by interactive visualization software. The collaborators have toured and exhibited their works widely, much to the delight of their audiences. Lieberman's installation / performance "Drawn," in which live painted forms appear to come to life, rising off the page and reacting to the world around them, recently won awards in the Ars Electronica and CYNETart competitions. Most recently, he presented "Opensourcery," collaboration with Spanish magician Mago Julian, in which open source software is combined with traditional close-magic to create a completely new realm of tricks.

Lieberman has held artist residencies at Ars Electronica Futurelab, Eyebeam, Dance Theater Workshop, and most recently at the Hangar Center for the Arts. He is also the founder, with Theo Watson and Arturo Castro, of openFrameworks, an open source toolkit for creative coding in C++.

John Maloney is the lead programmer for Scratch, a new programmable toolkit that lets kids create and share their own games, animated stories, and interactive art. Scratch is designed to help people learn programming and problem solving as they create personally meaningful artifacts.

Prior to joining the Lifelong Kindergarten John worked for computer pioneer Alan Kay. Under Alan, John developed key parts of Squeak, an experimental programming system for elementary school children. He also worked at Walt Disney Imagineering, where he built an experimental handheld electronic guide for theme park guests and software for a new attraction that earned the theme park equivalent of an Academy Award. Prior to working at Disney, John worked at Apple, Sun Microsystems Labs, and Xerox.

John has a Ph.D. in Computer Science from the University of Washington and M.S./ B.S. degrees in Electrical Engineering and Computer Science from MIT. John enjoys singing and playing the recorder. He also likes bicycling, hiking, and cross-country skiing.



Tom McMail is passionate about innovation, education and technology as means for improving the human condition. After his first university training in Psychology and Psycholinguistics, he taught K-12 in many subjects and grade levels, then took a role as social worker for Head Start. He has also worked as a professional musician and composer, plays more than 20 instruments and has taught improvisation, as well as music theory and composition.

After returning to school for a degree in Computer Science, he worked in the electronic gaming industry as a computer music and technical audio expert, and later became a producer and developer of educational software.

Overall, Tom has spent nearly 14 years at Microsoft in a variety of roles. At MSN, he used new technologies and techniques in support of special events and also created innovative plans for online community adopted across Microsoft.com properties.

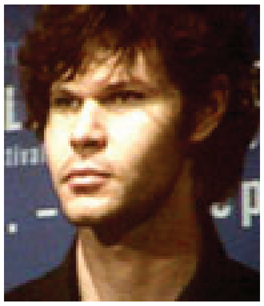
With MSR University Relations, Tom migrated regional efforts to a more strategic approach, directly addressing academic concerns about declining enrollments, gender disparity, and software security, introducing Tablet PCs to universities and driving experimentation to find best uses of technology to transform education. He was instrumental in introducing programs employing Gaming and Robotics as change agents for reinvigorating CS curriculum.

At Microsoft Research, in the External Research group, for the past two years he focused on seeking the most innovative new research and researchers emerging today as part of the Breakthrough Research initiative. Currently he is responsible for strategic collaboration programs with North American academic institutions and researchers.

Tom lives outside of Monroe, Washington with his family in the beautiful rural foothills of the Cascade Mountains.

Sebastian Oschatz is one of the founders of the Frankfurt-based media company MESO Digital Interiors, established in 1997 to work with experimental media interfaces and interactive installations. MESO creates computational and interactive exhibition designs for clients like Mercedes Benz, BMW, Nikon and Sony Ericsson, among others.

MESO has also been the home of the developers of the visual programming tool VVVV, created originally to run MESO's own projects. VVVV has since snowballed into a freely available multipurpose toolkit with an independent group of developers and a growing fan base. VVVV is well-suited for realtime video synthesis, and gives easy access to DirectX-shaders and a range of control protocols like MIDI, OSC and DMX-512. Little-known in the United States but heavily used throughout Europe, VVVV is an excellent tool for creating sound-responsive visual performances, although it has also been developed with interactive installations in mind.

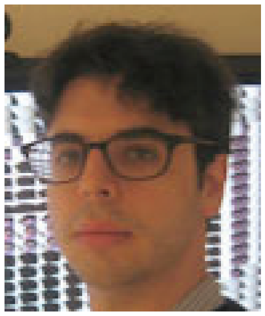


Casey Reas is an associate professor and chair of the Department of Design Media Arts at UCLA. His classes provide a foundation for thinking about software as a dynamic visual medium and set a structure for inquiry into synthesis of culture, technology, and aesthetics. With Ben Fry, Reas initiated Processing.org in 2001. Processing is an open source programming language and environment for creating images, animation, and interaction. In September 2007, they published Processing: A Programming Handbook for Visual Designers and Artists, a comprehensive introduction to programming within the context of visual media (MIT Press). Reas' essays have appeared in the books Network Practices (Princeton Architectural Press), Aesthetic Computing (MIT Press), Code: The Language of Our Time (Hatje Cantz), and the Programming Cultures issue of Architectural Design (Wiley).

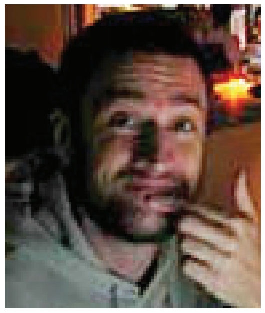
Don Slater was already a secondary school teacher in Western Pennsylvania when the first personal computers were introduced into his building. Don became a computer science teacher, when he realized he wanted to help others discover the cool things that they might be able to build with computers, as he had. Don taught and served as the technology director at Sewickley Academy, a private school in the Pittsburgh area. In 1998, he began teaching introductory programming part time at Carnegie Mellon. In 2000, he was invited to become a full time member of the Computer Science Department as a Lecturer.

Don joined the Alice Team in the fall of 2005 as he introduced Alice into his Introductory Programming course. Wanda Dann happened to be on sabbatical at Carnegie Mellon that fall. and she became a valuable advisor as they explored the using Alice in his course. With Wanda and Steve Cooper, Don has since presented at teacher training workshops around the country, as well as at various conferences, including NECC, SIGCSE, IMICT, and ISECON.

Don is a consultant for the College Board in Advanced Placement Computer Science. He has served as a reader and leader at the yearly Advanced Placement Computer Science Exam grading since 1991. He has written articles for the College Board and led teacher workshops throughout the east, and now directs the Advanced Placement Teacher Workshop held each summer at Carnegie Mellon.

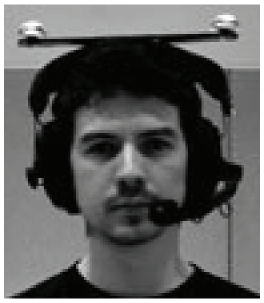


Daniel Shiffman is an Assistant Arts Professor at the Interactive Telecommunications Program (ITP) at NYU's Tisch School of the Arts. Originally from Baltimore, Daniel received a BA in Mathematics and Philosophy from Yale University and a Master's Degree from the Interactive Telecommunications Program. He is the author of Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction (Morgan Kaufmann Publishers, Elsevier Inc.)



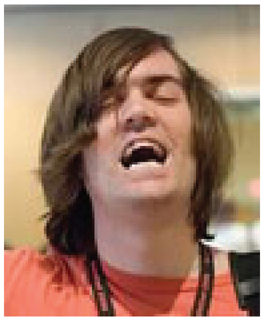
Hans-Christoph Steiner spends his time designing interactive software with a focus on human perceptual capabilities, building networks with free software, and composing music with computers. With an emphasis on collaboration, he has worked in many forms, including responsive sound environments, free wireless networks that help build community, musical robots that listen, software environments that allow people to play with math, and a jet-powered fish that you can ride. To further his research, he teaches and works at various media art centers and organizes open, collaborative hacklabs and barcamp conferences. He is currently teaching courses in dataflow programming NYU's Interactive Telecommunications Program.

His research focuses on making software tools enable read/write literacy, mostly focusing on Pure Data, a graphical dataflow programming language. He also is an active sound designer and artist, and draws the inspiration for shaping the software he works with from the creative projects he works on.



Theodore Watson is an artist, designer and experimenter whose work is born out of the curiosity and excitement of designing experiences that come alive and invite people to play. Theodore's work ranges from creating new tools for artistic expression, experimental musical systems, to immersive, interactive environments with full-body interaction. His recent work includes the Graffiti Research Lab's Laser Tag, laser graffiti system and Funky Forest, an immersive interactive ecosystem for young children. Theodore works together with Zachary Lieberman and Arturo Castro on openFrameworks, which is an open source library for writing creative code in C++.

Watson's work has been shown at MoMA, Tate Modern, Ars Electronica, The Sundance Film Festival, Res Fest, REMF, Cinekid, Montevideo, OFFF, SHIFT, ICHIM, The Creators Series, Deitch Projects, Eyebeam, Pixel Gallery, Museum N8 Amsterdam.



why the lucky stiff (or _why) is a computer programmer. His best known work may be Why's (poignant) Guide to Ruby, a book which teaches the Ruby programming language with stories; its eclectic style has been compared to a "collaboration between Stanislaw Lem and Edward Lear". Chapter 3 of this Guide was republished in The Best Software Writing I, edited by Joel Spolsky.

Most recently, Why has focused his efforts on the problem of how to better teach programming, and how to make programming more appealing to young people. His latest project, Hackety Hack, is a Ruby-based environment used to teach programming to children. His most vocal critics describe him as "a fledgling freelance professor, should one adhere to the most fraudulent of definitions." His biographical information, matter of point, is riddled with accolades which are clearly either lifted or falsified in order to cast him in a good light -- let's say 40 watts of violet."

Dr. Woohoo (translation: serious fun) is a New Mexico-based artist and programmer. Woohoo sculpts the form of his generative artwork and then harnesses natural phenomena (wind, gravity, etc.) and music, through algorithms, to drive his brushstrokes and composition. With a DIY attitude, he creates his own color, paint and visual effects applications using Adobe AIR and ExtendScript, and rather than recreate existing features and functionality, Woohoo integrates his tools with applications like Photoshop, Illustrator and Maya. Woohoo's latest work explores the dichotomy between Population vs. Consumption from the abstract perspective of Mother Nature. For more information on Dr. Woohoo, you can find him at DrWoohoo.com or in the featured article of the March issue of Photoshop User magazine.

Afterword

The Little Coder's Predicament by Why the Lucky Stiff (2003)

Used with permission

Okay, then, children of the modern age (where we live in a world so tied together with wires that Pangaea ain't goin' nowhere!), you tell me if this is a predicament or not.

In the 1980s, you could look up from your Commodore 64, hours after purchasing it, with a glossy feeling of empowerment, achieved by the pattern of notes spewing from the speaker grille in an endless loop. You were part of the movement to help machines sing! You were a programmer! The Atari 800 people had BASIC. They know what I'm talking about. And the TI-994A guys don't need to say a word, because the TI could say it for them!

The old machines don't compare to the desktops of today, or to the consoles of today. But, sadly, current versions of Windows have no immediately accessible programming languages. And what's a kid going to do with Visual Basic? Build a modal dialog? Forget coding for XBox. Requires registration in the XBox Developer Program. Otherwise, you gotta crack the sucker open. GameCube? GameBoy? Playstation 2?

Coding Just Isn't Accessible

Yes, there are burgeoning free SDKs for many of these platforms. But they are obscure and most children have no means of actually deploying or executing the code on their own hardware! This is obvious to us all and likely doesn't seem such a big deal. But ask yourself what might have happened had you not had access to a programming language on an Atari 800 or a Commodore. You tell me if this is a predicament.

It turns out, most of the kids in my neighborhood are exposed to coding through the TI calculator. A handful of languages are available on the TI and its processor is interesting enough to evoke some curiousity. But this hasn't spread to its PDA big brothers, where young people could have more exposure to programming. And undoubtedly the utility of a language on the Palm, Pocket PC and others would be useful to many.

So what's the problem here? We have no shortage of new languages, but they become increasingly distanced from the populace. Are the companies behind these platforms weary of placing the power of a programming language in the hands of users? Is there not a demand any longer? It's got to be some kind of greed, power, money thing, right?

Perhaps this is just another reason to push Linux and BSD on consumer systems. Still, are scripting languages easily accessible to beginners on those systems? OSX has made several scripting languages available (including Ruby and Python), but most users are unaware of their presence.

I should mention that Windows is equipped with its own scripting host for developing in JScript and VBScript. But the use of the scripting host is (I believe) under-documented and limited for beginners. Try doing something useful in a script without using Server.CreateObject. Let's not let kids touch the COM objects, please!

The Christmas List

I'm thinking a toy language for consoles and desktops alike could be monumental. I'm ot saying it needs to be cross-platform. A language for GameCube that took advantage of platform-specific features could be more appealing to GameCube users than a language that used a reduced featureset, but could execute on a handheld. Really, we live in a world where both choices should be available.

As for essential features:

1. Transportable code.

On my TI-994A, I could make a little, animated Optimus Prime from pixels. Insert cassette. Record. Pass around to friends. Receive high fives from friends. Put on wraparound shades. Thank you, TI! Thank you, Optimus Prime!

A little language for the consoles could be wildly popular if combined with the good ature of sharing code. This could be done by trading memory cards, but would be more effective if code could be easily obtained and posted on the Web. Learning would accelerate and collaborative development could take place.

A suitable language should give coders access to I/O devices, to allow experimentation with network devices and the ability to enhance one's connectivity with others. For the consoles, games could provide hooks for user mods. This has long proven a successful staple of the desktop gaming world.

2. Simplicity.

You've got to be able to write a single line of code and see a result. We need some instant results to give absolute beginners confidence. Simple methods for sending an e-mail, reading a web page, playing music. Demonstrable in a one-liner.

Admittedly, as our systems have grown complex, it is difficult to balance simplicity and capability. Most users will be unimpressed by code that emits beeps and bloops from a PlayStation 2. If Ruby were available on the PS2, then I would hope that I could hear rich symphonic sounds from a wee bit of code.

```
Orchestra.play( "A:2", "C:4", "E:1", "G:1" )
```

Access to the graphic engine might require more complex code. But simple drawing methods could be provided for beginners. Or images could be stored alongside code and accessed programmatically.

```
    ImageLibrary.load( “GolfingOldMan” ).drawAt( 12, 10 )
```

The trick would be to uncover what small applications might entice novices and still provide the ability to write large applications that would drive developers to master the language and not limit their growth.

3. Sensible environment.

Considering that many won’t want to purchase a keyboard for their gaming unit, let’s make sure that a reasonable environment is provided for entry of text. Controllers could be worked like the Twiddler. Or code could be transferred via IR, TCP/IP. (Dare I say cassette? :D)

4. Give it away!

It used to be that programming was practically an inalienable right for users. Include a language with the system, situated in a friendly spot. Each of the game consoles I’ve mentioned has launchers. (With the exception of Game Boy and its successors.) Provide a development prompt from the launcher. From desktop software, provide shortcuts for both the command prompt and a development prompt.

Remember, we’re looking for a language that requires no system hacks. No obscure links. No warranty violation. We’ve become so used to these techniques that it seems to be an essential part of getting our way.

And in many ways it is essential. Tinkering with hardware is learning. Lobotomizing and renovating is meaningful, magical. On behalf of those who prefer to code, I make these wishes. Not to take away jobs from the Phillips screwdriver.
The Ultimatum

My challenge is to Sony, Nintendo, Microsoft, Apple, and to those who manufacture and develop our interactive technology. Let us interact with these machines more deeply. Provide us a channel for having a dialogue with the entertainment boxes we nurture and care for. I swear to you, the relationship between the public and your product will assuredly blossom. That box will become more of a chest for our personal works.

In addition, if your developers start putting out crap, then you have a whole world of people to pick up the slack.

My challenge is for you to bundle a useful programming language with your product. Ruby, Squeak, REBOL, Python. Take your pick. It will be inexpensive to add any of these languages to your systems. And people will seriously pray to you. You know how geeks get when they pledge allegiance to something. But, yes, Ruby is preferable.

Acknowledgments

ART AND CODE is made possible by a generous grant from Microsoft Research, with oversight by the Center for Computational Thinking at Carnegie Mellon University. ART AND CODE is a project of the CMU STUDIO for Creative Inquiry, directed by Golan Levin. We express our gratitude to Microsoft Research and the CMU Center for Computational Thinking for their sponsorship, and to the STUDIO for Creative Inquiry and the CMU School of Art for their administrative support.

Conference Production Credits
Conference Organizer: Golan Levin (STUDIO for Creative Inquiry and School of Art, CMU)
Executive Producer: Peter Lee (Center for Computational Thinking and Computer Science Department, CMU)
Business Manager and Logistics: Jennifer Brodt (STUDIO for Creative Inquiry, CMU)
Additional Communications and Logistics: Marge Myers (STUDIO for Creative Inquiry, CMU)
Registration, Catering, Additional Logistics: Carolyn Manley (Conference Services, CMU)
Web Design and Communications: Drue Miller (drue.com)
Production Assistant and Coordinator: Courtney Dow (CMU School of Art)
Registration Database Rehabilitation: Andrea Boykowycz (Twirt.com)
Volunteers: Ally Reeves, Alyssa Reuter, Angela Wang, Caryn Audenried, David Kjos Jr., David Yen, Eamae Mirkin, Jet Townsend, Julie Mallis, Lea Allbaugh, Rexy Tseng, Riley Harmon, Robert Kotcher, Robyn Gray, Xiaoyuan Jiang, Yang Shan

Additional Credits and Acknowledgments
Exhibition Support: Adam Welch and Stefanie Moser (Pittsburgh Center for the Arts)
Exhibition Fabrication & Production: Jeremy Ficca and P. Zach Ali (Digital Fabrication Laboratory, CMU)
Film Series Programming: Gary Kaboly (Pittsburgh Filmmakers)
Dorkbot Co-Director & Liaison: Jet Townsend (Tangible Interaction Design program, CMU)
Great Good Place Maker: Eric Stern (brillobox)

We are grateful to CMU Cluster Services for their efforts in providing the best computers available for our workshops. We also express our gratitude to CMU Conference Services, for assistance in coordinating our lecture spaces and food service; and to the CMU School of Art for a variety of support, and in particular, Lauren Goshinski, Robert Kollar, Cindy Lammert, and Janice Hart of the CMU School of Art for their flexibility and assistance.

ART AND CODE is a symposium on programming environments for artists, young people, and the rest of us. The event takes place the weekend of March 7-9, 2009 on the campus of Carnegie Mellon University in Pittsburgh, PA. It features hands-on workshops and a conference showcase for 11 different creative toolkits -- programming languages made by artists, for artists.

Saturday March 7th features intensive three-hour workshops, taught by leading developers and authors, in a variety of programming environments. Some workshops are intended for more advanced users, but many are introductory in nature and are suited for all ages. Some workshops are specifically for teens and ‘tweens.

Sunday March 8th offers a day-long sequence of 45-minute presentations about each programming environment. Learn about who is using each programming environment, and why. Many of these lectures are given by the main people creating these toolkits.

Monday March 9th begins with two morning sessions of “Hello World” workshops that are ideal for beginners or people wanting a quick “leg up” into learning a new toolkit. These are followed, after lunch, by panel discussions featuring developers and educators.

Throughout the weekend are a variety of related events, including an exhibition of computational art at the Pittsburgh Center for the Arts, a festival of abstract film at Pittsburgh Filmmakers, an open-mic Dorkbot (show-and-tell / pecha-kucha) at the brillobox, and plenty of social meals.

printed on recycled paper