

Art & Code Initiative Short Report

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OVERVIEW

In the past decade, a significant cultural shift has taken place in regard to *who* is now able to program computers, *how* people are acquiring these skills, and *what* millions of everyday people are making when they write software recreationally. The *Art & Code* project is an investigation of this cultural shift, taking the form of a conference series and online community concerned with “the democratization of computer programming for artists, young people, and the rest of us”. Through symposia, discussions, and hands-on workshops, the *Art & Code* initiative explores the new programming tools, passion-driven learning techniques, and vibrant practitioner communities that have arisen at the intersection of DIY “maker culture” and the open-source movement – with an eye towards integrating these modes of education into the university setting.

Two *Art & Code* events have taken place. The first, “**Art & Code: New Programming Environments for Artists, Young People, and the Rest of Us**”, was held 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 the democratization of software-arts education; an exhibition of computational art; and a film series of generative art.

The second event, “**Mobile Art & Code: Mobile Media and Interactive Arts**” was held November 6-8, 2009, and explored the aesthetic and tactical potentials of mobile, networked and locative media. This three-day event featured 23 workshops in arts-oriented mobile phone programming – including device programming for 4 major mobile operating systems – as well as workshops in interface design for mobile devices, interactive telephony and voice-response systems, computational text messaging, and microcontroller programming. The conference also featured 11 free lecture presentations by leading international artists, designers, historians, hackers, entrepreneurs and researchers working in mobile and locative media, who contextualized the use of mobile technologies in a variety of contemporary critical, artistic and design practices.

The *Art & Code* initiative was funded through the re-distribution of a Microsoft Research Grant in Computational Thinking, in the form of a PROBE study from the Computational Thinking Center at Carnegie Mellon.

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. This premise has become increasingly urgent as everyday computing moves to mobile devices, which have been widely adopted by consumers and young people, but are notoriously challenging to program. In a world in which 90% of teenagers carry powerful computers in their pockets, we seek to challenge the implicit assumption (and form of learned helplessness) that *software is necessarily something made by someone else*.

Recently, a number of projects dedicated to democratizing the education of computational thinking have coalesced. Emerging primarily from the arts sector, 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. These toolkits – many of which are free, open-source libraries and IDEs – have made enormous inroads towards expanding the computational skills and interests of hundreds of thousands of creative people worldwide.

TOOLKITS

Art && Code events have featured workshop and lecture presentations by the lead creators behind some of the most widely-adopted toolkits for arts programming, including: Processing (Java), openFrameworks (C++), Max/MSP/Jitter, Pure Data, VVVV, Scratch, Hackety Hack, Alice, ActionScript (Flash), FlashLite, ExtendScript, Silverlight, Asterisk with PHP, Python, Objective-C, and Arduino.

OUTREACH and METRICS

The first *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 November *Mobile Art && Code* brought together 164 attendees, whose ages ranged from 12 to 68 (with an average of 29). Of the attendees, 52% were from CMU, 61% from Pittsburgh, and 64% from Pennsylvania. The remaining 36% came from 15 states (spanning from California to Massachusetts) and from six countries (USA, Canada, England, Finland, France, Portugal). Although the plurality of attendees were university students studying HCI, computer science and design, occupations also included artists, magicians, high school teachers, and university professors. The 164 attendees enrolled in 258 three-hour workshop sessions, for an average of 1.6 workshops per person, 11 persons per workshop, and a weekend total of 774 person-hours of learning. Thirty-one percent of the attendees were female.

FUTURE

The *Art && Code* conference promptly established a well-regarded “brand” of outreach events that we hope to continue in the future.

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MORE INFORMATION

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

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