IHART

Interactive Hallways for Attraction and Retention in Technology

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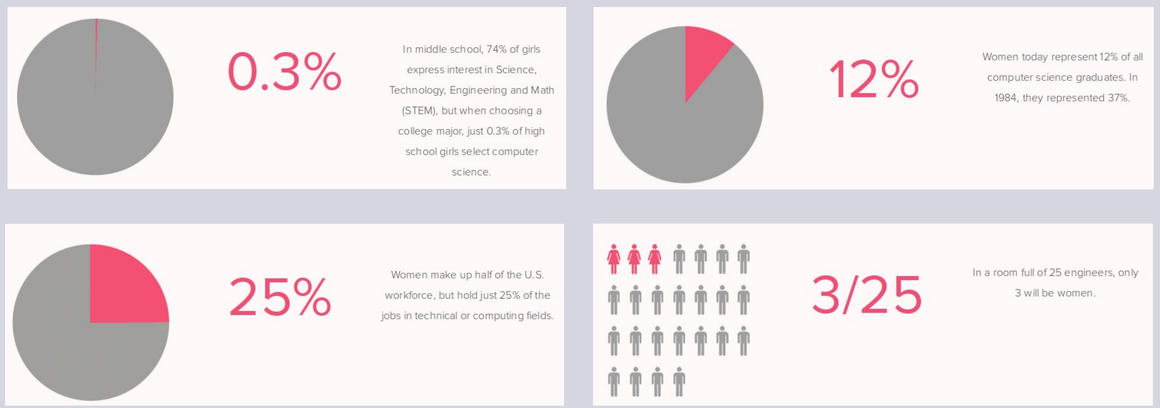
Abstract

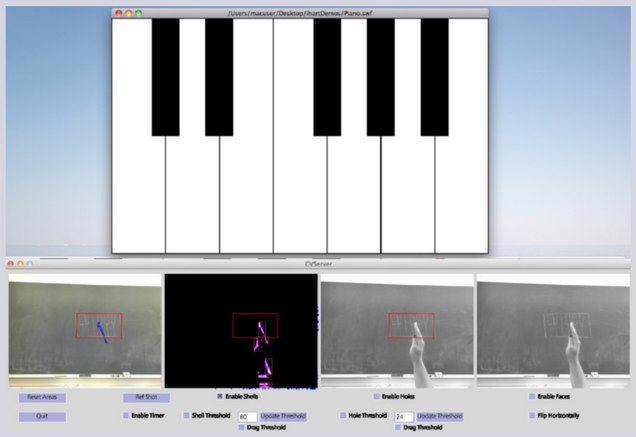
The main goal of the iHart project is to inspire women to pursue degrees in computer science and technology. The project aims to go beyond creating interactive hallways that are fun and interesting to walk through. Its goal is to attract the attention of the students who pass by and to increase their interest in computer science and technology. The project also provides inexperienced programmers with the opportunity to be able to create dynamic applications with rewarding graphics and functionality. Students who have only just started to learn more about computer science can easily get involved with the iHart project and see their work result in visually attractive and interesting public installation. The project strengths lie in its intuitive development environment and its easy and inexpensive installation into the hallway.

Motivation

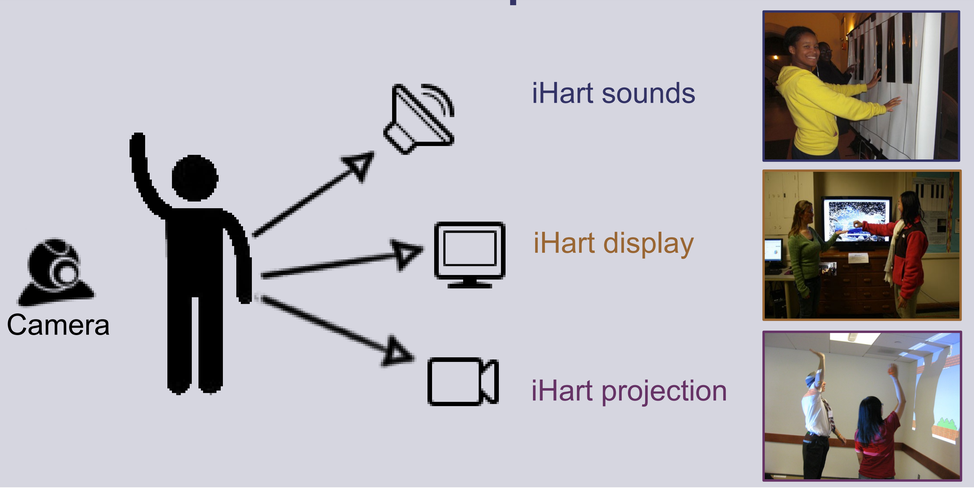


Figures reproduced from Girls Who Code website www.girlswhocode.com

iHart Interface



Setup



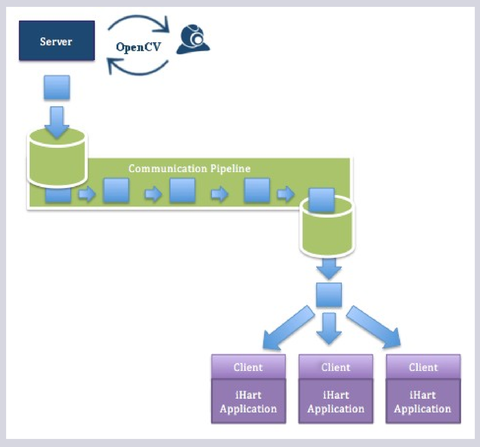
Levels of Interaction

User
- Consumer with minimal tech comfort (e.g. a high school science teacher)
- Usage of pre-compiled software

Beginner Developer
- Undergraduate student with intro CS class
- Application development

Developer
- Undergraduate student majoring in CS
- iHart software development

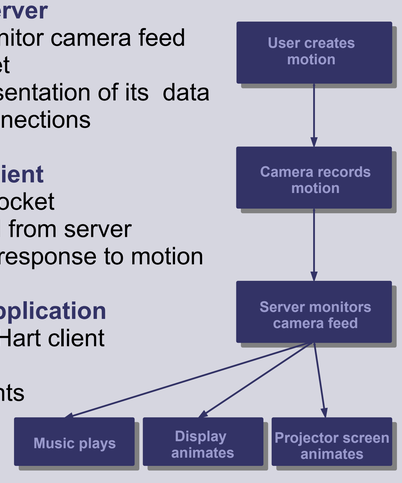
Technical Workflow



Server
- Uses OpenCV to monitor camera feed
- Creates server socket
- Creates String representation of its data
- Sends data to its connections

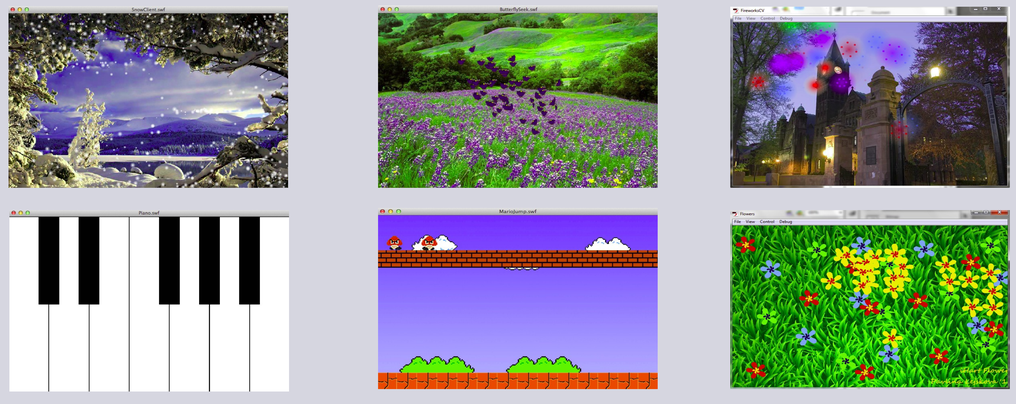
Client
- Connects to server socket
- Parses data received from server
- Triggers CVEvent in response to motion

iHart Application
- Creates instance of iHart client
- Listens to CVEvents
- Responds to CVEvents



Application Development

- Average application development time: 2 weeks
- Required level of programming skills: beginner



Strengths
- Inexpensive and easy installation
- Intuitive development environment
- Accessible to beginner programmers
- API which uses event architecture
- Open source SDK that offers access to latest computer vision technology using the OpenCV library

Current status
- User accessibility (public website, user manuals)
- Application development
- Expansion of features (motion tracking)
- Team of six students (beginner to advanced)

Future Goals
- Large scale projection in public space (library)
- Assessment of the impact on students
- Publicity and distribution plan

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Resources
- http://ihart-mhc.github.io/
- http://opencv.org/
- http://www.binarytides.com/java-socket-programming-tutorial/
- http://www.tutorialspoint.com/python/python_networking.htm