Jonathan Cole

Software Developer

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Summary

Multifaceted developer with a strong track record of rapidly integrating and innovating in a wide variety of software projects. Skilled with **virtual / augmented reality**, **iOS**, and **frontend web development**. Seeks to continue bringing innovation to human-centric computing.

Skills

Programming	C#, JavaScript, Swift, Python, C++, Java
Web Development	ES6, Node, Babel, WebGL, Frontend Development
Virtual Reality	Unity3D, Interactive Design, HTC Vive, Oculus Rift, Leap Motion
Augmented Reality	OpenCV, ARKit
App Development	iOS, macOS, Metal

Work Experience

Virtual Environment and Multimodal Interaction Laboratory

University of Maine, Orono, ME

Software Developer — *Sept. 2011 - Present*

- Worked in close collaboration with researchers to develop several VR simulations using Unity3D; responsible for code and design in solo and team projects
- Moved the lab into new territories with self-directed and wide-ranging projects, from the development of a custom-built wearable AR platform to the usage of VR to prototype AR techniques
- Integrated VR technologies with Unity3D before official support, often involving hardware hacking or creating native plugins
- Worked with several human interface devices, including the HTC Vive, Oculus Rift, Leap Motion, Microsoft Kinect, and optical marker tracking systems by Phasespace and WorldViz
- Created a full-stack implementation of the W3C Web Annotation Model for Dartmouth's Media Ecology Project
- Created native and Unity3D-based iOS apps for AR and data visualization contexts

Computer Science Department

University of Maine, Orono, ME

Graduate Teaching Assistant — *Sept. 2015 - Dec. 2016*

- Courses include Introductory Visual Basic, Introductory C++, Introductory Python, and Data Structures in C++
- Graded and consulted for ~80 students per semester

Best Buy

Bangor, ME

Computer Salesman — *Aug. 2009 - Sept. 2011*

- Responsible for customer interaction and computer sales in an interactive team environment
- Learned about the climate of the consumer electronics market

Projects

Oculus Eye

Undergraduate Thesis — *2015*

- Created a custom-built wearable augmented reality headset and the software to drive it using OpenCV. The research context of this project was to establish the usefulness of edge detection as a means of restoring depth information to users with age-related visual contrast sensitivity loss.

Kino

Master's Thesis *2017*

- Expanded Oculus Eye into a full software platform with a plugin architecture, enabling researchers to design computer vision experiments for wearable AR headsets without needing to worry about threading, camera synchronization, or OS details. An example plugin was developed for real-time object recognition via machine learning.

Waldorf / Statler

Full-Stack Web App *2017*

- Created the frontend and backend implementations of the W3C Web Annotation Model for Dartmouth's Media Ecology Project. Waldorf (the frontend) comprises an embeddable video player which allows users to create and edit rich annotations for web videos, while Statler (the backend) is a RESTful Rails backend that manages these annotations.

Morpho

Reaction-Diffusion Simulator *2017*

- Developed a macOS (and soon iOS) app that simulates various models of visually interesting reaction-diffusion systems. Metal is used to achieve high resolutions and framerates. Available for sale on the App Store.

Driving Simulator for Spatial Navigation Research

Immersive VR Research Platform *2012, 2013*

- Developed an immersive VR driving simulator in Unity3D for the purpose of studying the effects of age-related eye problems on spatial navigation. This simulator was used to perform foundational research for another student's Ph.D. work. This project was sponsored under three consecutive grants by the Center for Undergraduate Research at the University of Maine.

Education

University of Maine *Orono, ME*

B.S. in Computer Science *May 2015*

University of Maine *Orono, ME*

M.S. in Spatial Information Science and Engineering *Dec. 2017*

- Skills/domains learned include ArcGIS, R, Prolog, spatial statistics, databases, and data streams
- Research focused on augmented reality for sensory compensation

More

- Published developer on Apple's App Store
- Presented live programming sessions at the Maine Science Festival (2014-2016)
- Created software for three exhibits at the Discovery Museum in Bangor, Maine
- Developed many personal projects in Unity3D, including a networked multiplayer VR movie theater to enhance the Bee Movie experience
- Mensa member
- Second-degree black belt in Taekwondo