

# Collette Q. Roberto

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## EDUCATION

### University of California, Berkeley, Ph.D.

Educational Software Engineering, in-major GPA 3.7

Berkeley, CA

Aug. 2018 – Present

### Boston College, M.Ed.

Computer Science EdTech Engineering, in-major GPA 3.9

Boston, MA

June 2017 – Aug 2018

### Cornell University, B.A.

Physics, in-major GPA 3.7

Ithaca, NY

June 2012 – May. 2016

*Relevant Coursework:* Machine Learning, Algorithms, Discrete Math & Probability, Computer Security (Berkeley); Data Structures, Computer Systems (Boston); CS I in Python, Honors Calc. II, Quantum Mechanics, Multivariable Calc. for Engineers, Differential Equations, Linear Algebra (Cornell)

## EMPLOYMENT

### Front End Software Engineer

Computational Approaches to Human Learning (CAHL) Lab

Berkeley, CA

Aug. 2018 – May 2019

- Optimized the UI for AskOski, the Berkeley intelligent course recommender system (>1,500 users), by refactoring the course recommendations feature to more intuitively guide users through their general and major requirements.
- Led the newest feature redesign in the Angular.JS code base by refactoring & optimizing code across 10 interdependent components.

### Software Engineer and Project Lead

Innovations in Urban Science Education (iUSE) Lab

Boston, MA

June 2017 – Aug. 2018

- Built Back-End for IoT devices utilizing cloud integrations in Node-RED, integrating server-client networking to a real time data dashboard.
- Built and hosted Micropython curriculum documentation using TypeScript, with 10 programming challenges for use by over 200 8th grade students.
- Trained 10 teachers over 2 years to code in 9 distinct technologies and IDEs. Languages taught included C and Micropython, and technologies included WioLink, EsPy, Raspberry Pi, Arduino, ESP8266, Node-RED, and various actuators, sensors, and displays.

## SOFTWARE PROJECTS

### Lead Game Developer (Python) - *Guiaya Means Love*.

- Launched two major version releases (May 2019) and again (Sept 2019) for rigorous laboratory testing.
- Usability testers reported *Guiaya* is “really cool with fun puzzles,” it has a “clear setting and refreshing images” and that the storyline “challenges people to expand their ideas of what's acceptable in the hacker group” (Guiaya Data Archive, 09/05/19).
- Designed and implemented the User Interface in RenPy, a Python-based game engine.
- Optimized multi-platform hackability gameplay for Visual Studio, Vim, and Atom IDE integration
- Improved app performance to 75% perfect execution across OS X apps.
- Wrote culturally relevant anti-colonial storyline to fight social injustices (e.g. land theft) as the indigenous sovereign player character
- Animated over 30 sprite artworks utilizing the game engine and Adobe Photoshop.

### Lead Machine Learning Engineer (Python) - *Predicting Outcomes in Educational Games*

- Designed and implemented a feedforward neural network that tracks student game performance to predict their learning outcomes.
- Improved neural network performance by 15% (5-fold cross validation) by improving efficiency of data pre-processing by efficiently categorizing our multi-hot input vectors for our specified game parameter inputs.
- Leveraged knowledge of NumPy, Pandas, Jupyter, Google Colab, Keras, and TensorFlow.

### Game Developer (Unity) - *ModFox*

- Implemented menus and animations in C#
- Released the game on GitHub Pages using Unity's built-in WebGL features and JEYKLL open source repositories.

### Android Developer (Java) - *iLET Memory Capture App*

- Led the Android Back-End development team of 8 women engineers.
- Wrote the Java application in Android Studio for image and video capture and organization.

## PROFESSIONAL RESEARCH

### Stanford University FabLearn Conference

- Xu, Y., Roberto, C., & Rupani, R. (2017). Connect everyone, everything, everywhere with Node.Py: a framework for engaging learners in cloud computing using Python. (conference theme: Creativity and Fabrication in Education).

### Computer Supported Collaborative Learning Conference

- Semerjian, A. & Roberto, C. (2019). Toward a framework for designing computational interventions that promote students' Coding and Computer Science Interest & Identity.

### Journal of Science and Technology Education

- Roberto, C. (under review). A-im for Abstract Thinking: Applying abstraction to designerly thinking in the STEM disciplines.

### Invited Talk at MIT Media Lab

- Demonstrated MIT App Inventor apps built using integration of our user-friendly programming interface, Node.Py, which uses Python and Node-RED backend to make cloud computing easier for new learners.

## AWARDS

- **Diversity Fellowship** – (\$5000 per year)
- **Cornell Dean's List awarded 4 semesters** – GPA of 3.7 or higher
- **Major League Hacking Ethical Hack Finalist** – Top 10 project for iLET Memory Capture, selected from over 10,000 projects.

**Interests:** Piano, voice, running, basketball | **Skills:** Python, Java, C, Angular, JavaScript; some C#. Git. Adobe Photoshop.