

Brooke K. Ryan

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EDUCATION

University of California, Irvine

M.S. in Computer Science, 3.8

Irvine, CA

September 2020 – June 2022 (expected)

University of California, San Diego

B.S. in Mathematics-Computer Science, 3.4

La Jolla, CA

2013–2017

RESEARCH INTERESTS

• Artificial Intelligence • Deep Learning • Neural Networks • Machine Learning • Computer Vision • Data Science • Cognitive Science • Neuroscience • Computer Science Education • Software Engineering • Software Engineering Education

RESEARCH EXPERIENCE

Master's Student Researcher

Pierre Baldi's Group, School of Information and Computer Science, UC Irvine

Irvine, CA

March 2021 - Current

- Conducting research around the applications of deep learning to the natural and physical sciences under Professor Pierre Baldi.

Master's Student Researcher

Professor André van der Hoek, School of Information and Computer Science, UC Irvine

Irvine, CA

July 2021 - Current

- Conducting research around Software Engineering education.

PUBLICATIONS

1. **Brooke Kelsey Ryan**, Adriana Meza Soria, Kaj Dreef, André van der Hoek, "Reading to Write Code: An Experience Report of a Reverse Engineering and Modeling Course", (*In submission*), *October 2021*

RESEARCH PROJECTS

Machine Visual Acuity

Baldi Lab and Browne Lab of Ophthalmology

UC Irvine

March 2021 - Current

- Jointly-conducted research project between the Baldi Lab and the Browne Lab in the department of Ophthalmology.
- Trained convolutional-based neural network to recognize optotypes with low amounts of distortions so that it can use its knowledge to classify an unseen optotype from a testing set with optotypes with medium to high amounts of distortions.

Reverse Engineering and Modelling

Professor André van der Hoek

UC Irvine

March 2021 - Current

- Writing a research experience report on teaching "How to Read Code" Course in a Professional Software Engineering Master Program.

SOFTWARE ENGINEERING EXPERIENCE

Blizzard Entertainment

Irvine, CA

Associate Software Engineer

January 2020 - February 2021

- Backend Java engineer in the Battle.net and Online Products organization, delivering eCommerce APIs and capabilities on the Purchase team; additionally working in SQL and relational databases.
- Altered critical Purchase-system APIs to implement functionality to support several new payment methods and platforms in Korea region; co-presented an organization-wide talk on the project and methodologies used.
- Founder and facilitator of tri-weekly organization-wide book club to promote knowledge and application of theoretical knowledge to eCommerce systems; topics include Relational Databases, SQL Querying, Splunk.

Intuit

San Diego, CA

Software Engineer I

August 2017 - November 2018

- Backend Java engineer; delivered Identity capabilities across Intuit products.
- Created Spring “Annotator” tool, automatically converts any Spring XML project to equivalent annotation configuration. Increases unit test speed 12x, provides business savings in reducing server runtime during test build. Gave organization-wide tech talk; open-sourcing for over 10,000 Intuit employees.
- Implemented Lastmile security checkpoint for AWS migration; tested using Undertow server container, 120x quicker technique than deploying to Tomcat.
- Delivered bulk API nearly 2 months prior to customer production deadline with additional query parameters for filtering. Significant speedup in batch retrieval for QuickBooks.
- Led Identity team to improve speed and stability of CICD test and build cycle. Researched strategies to address infrastructure issues, implemented automated build jobs for visibility on flaky tests. Decreased build by 1.5 hours.

Intuit

San Diego, CA

Software Engineering Intern

June 2016 - September 2016

- Intern on iOS TurboTax application team, focus in Java and React Native.
- Implemented Java HipTest integration project for TurboTax mobile front-end QE team. Improved visibility of manual tests by implementing interface for test data. Reduced time in manual testing by 20; saved team >40hr/ release.

CBS Interactive

San Francisco, CA

Software Engineering Intern

June 2015 - August 2015

- Front-end software engineering intern on the Advanced Technology Team.
- Implemented several key features on the Content Management System JavaScript framework, increased efficiency by utilizing AJAX and MVC design.
- Awarded 1st place in company-wide hackathon developing a feature for the Content Management System that allows CBS articles to be published directly from Twitter using Node.JS. Increases search engine optimization, article views, and ad revenue.

TEACHING EXPERIENCE

• Lead Instructor for Girls Who Code

May 2021 - July 2021

Virtual Summer Immersion Program

- Virtual summer program for 10th-11th grade girls, teaching computer science fundamentals using Scratch, Python, Arduino, C, JavaScript, CSS, and HMTL with the goal of increasing representation of women pursuing STEM careers.

• Teaching Assistant and Co-Lecturer at University of California, Irvine

Spring 2021

Reverse Engineering and Modeling (SWE 265P)

- Introduces theories, concepts, representations, techniques, and case studies in understanding large-scale, complex software systems. Topics include static and dynamic modeling notations, manual and (semi-)automated reverse engineering techniques, APIs, patterns, and styles. A significant, hands-on project is included.
- **Teaching Assistant** at University of California, Irvine Winter 2021
Programming Styles (SWE 262P)
 - Topics include: procedural styles, functional styles, object-oriented styles, data-centered styles, error handling styles, and styles for concurrent and parallel programming.
- **Teaching Assistant** at University of California, Irvine Fall 2020
Project Management (Informatics 150)
 - Introduces concepts and principles of collaborative systems. Topics include shared workspaces, group interaction, workflow, architectures, interaction between social and technical features of group work, and examples of collaborative systems used in real-world settings. Students develop a collaborative application.
- **Lead Instructor** for Girls Who Code May 2019 - August 2019
Summer Immersion Program
 - 7-week program for 10th-11th grade girls, teaching computer science fundamentals using Scratch, Python, Arduino, C, JavaScript, CSS, and HTML with the goal of increasing representation of women pursuing STEM careers.
 - Implemented original curriculum in order to facilitate further understanding and engagement in advanced topics such as Git, command line, and Python source code.
 - Mentored and managed 20 students and an undergraduate assistant instructor.
 - Rated highest-performing teaching team in the Southern California region.
- **Undergraduate Project Advisor** at University of California, San Diego September 2015 - June 2017
Design for Development (ENG 100D)
 - Taught and advised interdisciplinary teams (approx. 150 students per quarter) collaborating with nonprofit orgs to design technology-based solutions to social and environmental problems.
 - Advised K-12 STEM education program. Led visits to local schools to engage children in STEM-related topics taught by UCSD engineers with the goal of increasing representation of people of color and women pursuing higher education in STEM.

SKILLS

- **Deep Learning Libraries:** Keras, Tensorflow, PyTorch
- **Languages:** Python, Java, Kotlin, JavaScript, Ruby, Scala, HTML, CSS, SQL, C++
- **Tools, Techniques, and Frameworks:** Functional programming, software design, object-oriented programming, REST APIs, code generation, Git, backend software engineering, front-end software engineering, quality engineering, human-centered design, Arduino, Raspberry Pi, React Native, Node.js

SCHOLARSHIPS AND AWARDS

- UC Irvine Teaching Assistantship 2020 –Current
- 1st Place, CBS Interactive Company-Wide Summer Hackathon Summer 2016
- Provost Honors, UC San Diego Awarded four times between 2013 –2017