Nicole Mitchell

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EDUCATION

RICE UNIVERSITY | George R. Brown School of Engineering • Houston, TX
MS in Computer Science
Expected May 2020 • GPA: 3.67/4.00
BS in Computer Science
December 2018 • GPA: 3.79/4.00

AWARDS

2019 Adobe Research Women in Technology Scholarship
2019 Rice Computer Science Graduate Research Fellowship
2019 Conference USA Commissioner's Academic Medal (All Years)
2019 Rice University Honor Athlete (All Years)
2018 President's Honor Roll (All Years)
2018 CRA-W GHC Research Scholar
2017 Elizabeth D. Williams Scholarship for Study Abroad
2017 Rice Undergraduate Business Pitch Competition Winner

RESEARCH

KAVRAKI COMPUTATIONAL ROBOTICS, AI AND BIOMEDICINE LAB | Rice University Dept of CS
Graduate Research | January 2019 - Present

- Built a deep graph convolutional network (GCN) using Pytorch to predict drug metabolism

Undergraduate Research | January 2018 - December 2018

- Improved an incremental docking protocol (DINC), which computationally predicts how peptides bind to protein receptors
- Evaluated the latest version of DINC by writing scripts to automate re-docking experiments on XSEDE Comet Supercomputer

STATISTICAL MACHINE LEARNING TERM PROJECT | Rice University Dept of CS
Graduate Coursework | Spring 2019

- Constructed U-Net model in Keras to identify roads in satellite images
- Researched image segmentation techniques, consulting the literature on convolutional neural network (CNN) architectures
- Experimented with architectures, ensembling and pre- and post-processing; performed hyper-parameter tuning

INTERNSHIPS

APPLE | iCloud Storage Analytics Intern
May 2018 – August 2018 | Cupertino, CA

- Built a data pipeline to query server logs and gather time-series metrics on our services
- Wrote a Spark job in Scala to process and aggregate raw data, storing the results in blob storage
- Developed and implemented an anomaly detection system in Python using Pandas, SciPy and Matplotlib to automatically detect regressions in quality of service among subsets of our network, and generate reports to alert iCloud engineers
- Presented work to 30 engineers at iCloud and individually to Vice President of iCloud, Mike Abbott

SQUARE | Appointments iOS Intern
May 2017 – August 2017 | San Francisco, CA

- Optimized the calendar in Square Appointments iOS app by improving the search algorithm and identifying performance bottlenecks
  - Made a 16-fold improvement in CPU time spent rendering events and hour lines that restored calendar to 60 fps scrolling
- Added a feature to help users realize when their time zone differs from that of the business they are viewing
- Developed a customized market insights tool for merchants to see how their prices compare to nearby sellers
  - Used the ML model "word2vec" on transaction data to group similar items on merchants' menus
  - Built a Python Flask app with D3 Visualization to display interactive, customized reports

FACEBOOK | iOS Mobile App Development Intern, FBU
June 2016 – August 2016 | Menlo Park, CA

- Developed an iOS mobile app in Swift that helps users remember the people they've met by using location tracking to auto-log events

ACTIVITIES & INTERESTS

RICE UNIVERSITY WOMEN'S TRACK & FIELD | Varsity Athlete
August 2015 – Present | Houston, TX

- Dedicated 20 hours per week training and competing for Rice University's NCAA Division I Track & Field Team

RICE UNIVERSITY ACADEMIC ADVISING FOR ATHLETICS | Tutor
January 2018 – Present | Houston, TX

- Tutored female student-athletes in computer science courses to instill confidence in their ability to succeed in STEM fields

WOMEN IN COMPUTER SCIENCE | Mentor, Club Member
August 2015 – Present | Houston, TX

- Advised underclassmen interested in computer science on course selection, internships, and study abroad
- Planned and participated on a panel about study abroad for computer science majors

DESIGN FOR AMERICA | Team Leader, Studio Member
January 2016 – May 2018 | Houston, TX

- Led an interdisciplinary team of six to design a prosthetic that allows users without fingers to write using a pen or pencil
- Developed a modular toy to teach kids Boolean logic; worked on the mechanical design, fabrication, and accompanying iOS application

PUBLICATIONS

JOURNAL ARTICLES

2019 Didier Devaurs, Dinler A Antunes, Sarah Hall-Swan, Nicole Mitchell, Mark Moll, Gregory Lizée, and Lydia E Kavraki. Using parallelized incremental meta-docking can solve the conformational sampling issue when docking large ligands to proteins. BMC Molecular and Cell Biology, 20(1):42, September 2019

POSTERS

Applying Graph Convolutional Neural Networks for Drug Metabolism Prediction | Litsa, E., Mitchell, N., & Kavraki, L. E.

2019 Rice Data Science Conference
2019 29th Annual Keck Research Conference

Road Identification in Satellite Images Using Image Segmentation Approaches | Mitchell, N. & Fox, L.

2019 Rice University Statistical Machine Learning Poster Session

Evaluating DINC 2.0: An Improved Version of an Incremental Docking Protocol for Large Ligands | Mitchell, N., Devaurs, D., & Kavraki, L. E.

2018 Rice University Undergraduate Research Symposium

COURSEWORK

GRADUATE
Artificial Intelligence
Statistical Machine Learning
Research Communications

UNDERGRADUATE
Algorithms
Data Science Tools & Methods
Matrix Analysis
Probability & Statistics

SKILLS

PROGRAMMING LANGUAGES
Proficient
Python • Java • C • Scala • Swift • SQL • Bash • LaTeX
Familiar
Objective-C • HTML/CSS • JavaScript

DEVELOPMENT TOOLS
Proficient
AWS EC2 and S3 • Pytorch • TensorFlow • Keras • Scikit-Learn • Spark • Anaconda • Docker • CUDA

LEADERSHIP
Doerr Institute for New Leaders
Completed one-on-one leadership development coaching