Suzanne Petryk

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EDUCATION

University of California, Berkeley, Berkeley, CA **August 2019 - Present**
Current Ph.D. student in AI - focus on *Computer Vision* and *Machine Learning Systems*
Co-advised by Joseph Gonzalez and Trevor Darrell

Cornell University, College of Engineering, Ithaca, NY **August 2015 - May 2019**
Bachelor of Science, Computer Science
GPA: 3.84; Dean's List All Semesters

Relevant Courses: Computer Vision (graduate course), Advanced Machine Learning Systems (graduate course), Supervised Machine Learning, Machine Learning for Data Science, Artificial Intelligence, Functional Programming

RESEARCH EXPERIENCE

Summer Undergraduate Program of Engineering Research at Berkeley **June - August 2017**
Advisor: Prof. Alexandre Bayen *University of California, Berkeley*

- Collaborated on paper on use of loop detector data to estimate arterial traffic flow fundamental diagram. Collaborating on additional paper on validation of microscopic traffic simulator accuracy and lane blockage detection with intention of publication.
- Presented research as plenary speaker for Ivy League Undergraduate Research Symposium in November 2017
- Implemented algorithm to identify lane blockages at signalized intersections using traffic simulator AIMSUN

Materials Research Science & Engineering Centers REU Program **June - August 2016**
Advisor: Prof. Taylor Sparks *University of Utah*

- Collaborated on paper on effect of topological insulator crystal growth conditions on surface mobility and quantum transport
- Won REU's poster competition and presented at 2017 National Council on Undergraduate Research
- Used melt and thermal transport methods to grow single crystals of topological insulator $BiSbTeSe_2$ and Dirac semimetal Cd_3As_2

EMPLOYMENT EXPERIENCE

Data Science Intern, *Citrine Informatics* **June - August 2018**

- Built framework in Scala to accelerate training data collection for machine learning model on materials datasets.
- Built machine learning pipeline from data collection to model testing. Constructed ML model used to predict probability of success for separate ML process as form of meta-learning.
- Created and thoroughly documented visualization tooling for dataset quality and model analysis.

Operating Systems Teaching Assistant, *Cornell University* **August 2018 - December 2018**

- Contributed the most answers to student questions on online Q&A forum for course out of 21 undergraduate TAs

Computer Vision Teaching Assistant, *Cornell University* **January - May 2019**

- Developed new machine learning project for students from scratch

PROJECTS

AI Driving Olympics **October - December 2018**

- Developing machine learning system on Raspberry Pi along with 9 other Cornell University team members to guide small robots with front-facing camera through miniature traffic networks
- Training end-to-end imitation learning framework for robotic control using driving videos annotated with wheel velocities

Machine Learning Mobile Application **February 2018 - May 2018**
Supervised by Prof. Kilian Weinberger *Cornell University*

- Worked with group of undergraduates on mobile app to calculate score of Kingdomino board game based on image of board (Github repository at github.com/apoorvkh/DenseDomino)

- Trained DenseNet neural network using Keras and Amazon Web Services
- Guided development of Keras training code and decisions on data augmentation, model saving for mobile deployment, data collection, image preprocessing, and computer vision techniques

Cornell Health Hackathon, *Data Scientist* **January 2018**
- Pitched idea on applying interpretable machine learning to identify relevant genome sequences contributing to antibiotic resistance
- Won top $1500 prize in Data Visualization category with team of 6 people

Cornell Animal Health Hackathon, *Team Creator* **January 2017**
- Pitched idea on using machine learning for speech recognition to identify signs of illness in birds
- Modified speech recognition program to distinguish between healthy and sick bird sounds
- Selected to present to panel of judges based on ranking in top 50%

PUBLICATIONS

Qijian Gan, **Suzanne Petryk**. *"Estimation of arterial traffic flow fundamental diagrams using data from advance loop detectors"*. Presented at 98th Annual Meeting of the Transportation Research Board, Washington, D.C., 2019.

Kyu-Bum Han, Su Kong Chong, Akira Nagaoka, **Suzanne Petryk**, Michael A Scarpulla, Vikram V. Deshpande, and Taylor D. Sparks. *"Enhancement in surface mobility and quantum transport of $Bi_{2-x}Sb_xTe_{3-y}Se_y$ topological insulator by controlling the crystal growth conditions"*. *Scientific Reports* **8**, Article number: 17290 (2018).

EXTRACURRICULARS

Girls Who Code, *Volunteer Teacher* **September 2016 - May 2019**
- Teaching on a weekly basis a class of 20 high school students fundamental computer science concepts with JavaScript
- Assisting individual students with course projects, including basic web design and Arduino programming

Tau Beta Pi National Engineering Honor Society, *Inducted Member* **November 2018 - May 2019**

Engineers for a Sustainable World **January 2016 - May 2017**
Automated Irrigation project, Arduino Software Subteam
Varsity Cross Country, Track and Field **August 2015 - May 2017**
Letter winner, September 2016

SPECIALIZED SKILLS

Programming: Python, Scala, C, JavaScript, Matlab, OCaml, Git, Emacs
Maching Learning Frameworks: PyTorch, Tensorflow, Keras
Languages: Polish (conversational), Spanish (intermediate), Latin (basic)