Akul Gupta
San Jose, CA
akulgupta2000@gmail.com

Tools & Technologies

Programming Languages	C++, Python, C, Java, Bash, Vim
Computer Vision	OpenCV
Deep Learning	Tensorflow, scikit-learn, numpy, matplot, pandas
Github	https://github.com/Agupta00/projects

University of California, Santa Cruz
Bachelor of Science in Computer Science, September 2018 - June 2020

- Honors: summa *cum laude* (GPA: 3.9/4.0)
- Course Work: Machine Learning (graduate level), Artificial Intelligence, Operating Systems, Computer Security, Algorithms

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Allen Institute of Brain Sciences
Software engineer internship, June 2020 – October 2020

My research leveraged machine learning and deep learning to better understand relationships between different brain subsystems based on dataset collected on mice neuron activity

- Read leading computational neuroscience research publications
- Trained RNN's (recurrent neural networks) on mice neuron activity dataset using **Tensorflow**
- Implemented pipeline to train hundreds of models on the high-performance computing interface using TORQUE
- Developed python scripts to analyze trained model weights for insights into mice brain connectivity (looked at weight distributions and eigenvalues)
- Probed other scientists at the institute for their expertise on neuroscience topics
- Successfully presented the informative results at the Neuromatch conference
- Abstract: https://github.com/Agupta00/projects/blob/master/mice_rnn.pdf
- **(Python, Tensorflow, Matplot, TORQUE, Bash scripting)**

UC Santa Cruz - AI Researcher
September 2019 – May 2020

Researched scale and orientation invariant computer vision algorithms

- Developed a scale and orientation invariant algorithm based on contour relationships with each other. Contour relationships are invariant features relative to one another.
- Worked to extend the idea of contour invariance to “one-shot” learning
- Code/abstract: https://github.com/Agupta00/invariant
- **(Python, OpenCV)**

Smart Camera Project (High School)
Developed a facial recognition camera using openCV and an off-the-shelf camera.

- Used **OpenCV** to capture flow in the video frames to detect motion activity
- Used Animetrics API for facial recognition
- Used Twillo API to send alerts and text messages to user
- Blog Post: selflearningcamera.blogspot.com
- Code: https://github.com/Agupta00/projects/tree/master/human
- **(Java, OpenCV)**

UC Santa Barbara - Natural Language Processing Lab
Summer 2017 (High School)

Created graph visualization tool to visualize large knowledge graphs under mentorship of Prof. William Wang

- Read papers on entity linking algorithms and knowledge graphs
- Wrote python scripts to visualize knowledge graph using Gephi
- Explored various clustering techniques to understand the convoluted clustering patterns in the knowledge graph
- **(Python)**

Projects

- C++ filesystem: https://tinyurl.com/y8fl5dz8
- C++ graphical interface: https://github.com/Agupta00/gui
- C++ client server: https://tinyurl.com/ydymrkt8
- C shell implementation: https://tinyurl.com/ych7m8mw
- Flight connector program: https://tinyurl.com/y8n2lerp
- TinyLanguage interpreters: https://tinyurl.com/y85r7na8