Nikhil Sardana

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Education

- **Stanford University** — Stanford, CA
  Prospective Major: Computer Science/Math — *Sep. 2018 – Present*

  CS 107, CS 110: Computer Systems
  CS 161: Algorithms
  CS 236: Deep Generative Models
  Math 61CM: Real Analysis & Linear Algebra
  Math 62DM: Group / Number Theory

- **Thomas Jefferson High School for Science and Technology** — Alexandria, VA
  Computer Systems Research; GPA: 4.51 — *Sep. 2014 – June 2018*

Experience

- **Communications Engineering Branch, National Institutes of Health** — Bethesda, MD
  Engineering Intern — *June 2017 – Aug. 2017*
  - **Research**: Classifying Alzheimer's from fMRI Data using Convolutional Networks
    Wrote extensive preprocessing pipeline for rs-fMRI data. Developed Inception-ResNet-v2 model to classify Alzheimer's and five stages of cognitive impairment more accurately than previous algorithms.

Projects

- **Automating Identification of Terrorist Recruitment on Social Media** — *Aug. 2016 – July 2017*
  - **Research**: Created algorithm to identify terrorist propaganda accounts. Used convolutional networks for flag and logo identification. Extracted features from captions and used SVMs to classify accounts with over 90% accuracy.
  - **Talks**: Presented research at Raytheon BBN and the National Security Agency.
- **Towards Fast Generative Compression**: Modifying the pix2pixHD generator to improve inference time while retaining image quality. Experimented with dense blocks, normalization techniques, and downsampling methods. Final project for CS 236.
- **Mask SSD**: Adding a masking branch to the Single Shot Detector for fast instance segmentation. Incorporated optical flow to improve accuracy on video datasets.
- **Team smite, MIT Battlecode**: Wrote pathfinding, combat, and communications algorithms and heuristics in JavaScript (2019) and Java (2018) to compete against hundreds of teams. 1st place (2019); T-9th place (2018).
- **TitrationGL**: WebGL redox titration simulator. A browser-based lab for high school chemistry classes.

Activities

- **TJHSST Machine Learning Club** — Alexandria, VA
  Co-founder and Captain — *Sep. 2016 – June 2018*
  - **Teaching**: Wrote and presented 100+ pages of lectures on machine learning to teach 40+ students. Created weekly Kaggle InClass competitions for students to apply lecture material to real-world datasets.
  - **Outreach**: Procured sponsorships from Intel, Yext, and TJ Partnership Fund for computational resources.

Awards

- Regeneron STS Scholar — *2018*
- Intel International Science and Engineering Fair Finalist — *2017*
- Siemens Competition Semifinalist — *2016*

Skills

- **Languages**: Python, Java, C/C++, HTML, CSS, JavaScript, LaTeX
- **Libraries**: Pytorch, Keras, Tensorflow, three.js
- **Technologies**: Git, Google Compute Engine, Google Analytics