Roop Pal

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Machine learning software engineer interested in computer vision, deep learning, and robotics.

EDUCATION

BS/BA Computer Science (GPA 3.8/4.0)   2015 Aug - 2019 May

Columbia University/Bard College at Simon's Rock
Entered college early at the age of 15, completed a 5 year dual-degree program in 4 years
- **Distinctions:** Jesse A. Fecker Merit Scholarship
- **Courses:** Advanced Computer Vision, Deep Learning, Computation and the Brain, Humanoid Robots

EXPERIENCE

Google, L4 Software Engineer (Perf 2021: Superb, top 6%) — *Mountain View, CA*   2019 Jun – Now
- ML expert focused on researching experimental approaches and productionizing pipelines
- Joined team focused on securing Google offices using a novel intruder detection algorithm
- Designed, developed end-to-end ML pipeline classifying presences as human/non-human
- Extended YOLOv3 algorithm to 3D to detect objects at 94.80% accuracy, 93.18% precision
- Created end-to-end evaluation dashboard, proving ML improvement on FPR by 10%, accuracy by 8%
- Created Angular webapp to label 3D data for ML (20k frames) and regression tests (1k scenes)
- Created evaluation framework for lidar foreground detection, testing 4 models across 6 sites
- Wrote desk scheduler enabling 15k Googlers to return to 51 offices after Covid-19
- Managed launch of team's product ensuring accessibility, privacy, and scalability requirements are met

IBM, Extreme Blue Intern — *Durham, NC*   2018 May – Aug
- Led independent intern team to create a product that helps manage teams
- Presented work and business case to executives at IBM weekly
- Used state of the art machine learning approaches to visualize and present team collaboration
- Completed full-stack work to create web app using Flask, GraphQL, JavaScript, and React

Columbia Creative Machines Lab, Research Intern — *New York, NY*   2017 Aug – Dec
- Deep learning research using a variety of approaches to beat CIFAR-100 benchmark
- Work implemented using Facebook's pytorch and google cloud platform
- Implemented DenseNet + cutout, decision-based classifiers, and fractional max-pooling

KPMG, Cognitive Automation Intern — *New York, NY*   2017 Jun – Aug
- Application of NLP solutions to document analysis using nltk and Stanford NLP
- Independently developed software to detect duplicate posts in Stackoverflow
- Created user interface for automated annotation tool on medical records

Bard College at Simon's Rock, Research Intern — *Great Barrington, MA*   2017 Jun – Aug
- Researched generative combinatorics and mathematics backgrounds of problem
- Found complete gray codes for 11 fundamental combinatorial objects using greedy algorithms
- Developed, generalized Java application to test any combinatorial object's complete Gray code
- Found successor rules, equivalent recursive codes, and bijections between object

Affirmed Networks, Software Development Intern — *Boston, MA*   2016 Jul – Aug
- Java web-application backend development for virtualized MVNO modeling and deployment
- Logging, AOP design, profiling, bug-fixing and feature implementation using Spring

ADDITIONAL DETAILS
- **Founder:** PSXL, an EEG-controlled picosat platform. Conceived prototype, built team, secured 20k funding
- **Volunteering:** Worked at Verily Covid-19 testing sites (~90 hrs), TA'd MLCC to CapitalG companies
- **Lead Speaker:** Tech Salon, NYC, 2015: Ethical Data and Design for our Wearable Sensor Future
- **Recognition:** State Award for High Honors in the International Math & Verbal Talent Search
- **Languages:** English, Bengali, German
- **Interests:** Piloting, snowboarding, rock climbing, jazz piano, saxophone