

Sharan Ramjee

MASTER'S STUDENT AT STANFORD UNIVERSITY

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Education

Stanford University

MASTER OF SCIENCE IN COMPUTER SCIENCE (CONCENTRATION: ARTIFICIAL INTELLIGENCE)

Stanford, CA

Sep. 2020 - Exp. Mar. 2022

- Distinction in Research; GPA: 4.03/4.00

Purdue University

BACHELOR OF SCIENCE IN COMPUTER ENGINEERING

West Lafayette, IN

Aug. 2016 - May. 2020

- Graduated with Highest Distinction; GPA: 4.00/4.00

Industry Experience

Stripe

SOFTWARE ENGINEERING INTERN

San Francisco, CA

Jun. 2021 - Sep. 2021

- Worked with the Fraud Intelligence team (Merchant Intelligence Engineering Org) on using ML models for detecting fraudulent merchants
- Deployed model interpretability methods (LIME, SHAP, etc) to investigate false positive and negative predictions made by the models
- Explored various feature encoding methods for numerical, categorical, and boolean features to gauge trade-offs and improve model performance

Google

SOFTWARE ENGINEERING INTERN

Seattle, WA

Sep. 2019 - Dec. 2019

- Worked with the Google Cloud AI team on using Model Distillation to create Explainable AI by generating rules that explain Deep Learning models
- Created a system to tune the complexity of rules generated, number of rules generated, and accuracy of the Deep Learning model
- Implemented Soft Decision Trees, Random Forests, and Gradient Boosted Decision Trees to compare their trade-offs for Model Distillation

Qualcomm

MACHINE LEARNING INTERN

San Diego, CA

May. 2019 - Aug. 2019

- Worked with the ML Application Analysis Team on using Deep Learning to make Qualcomm Snapdragon chips more power-efficient
- Upgraded the automation tool of the QoS logger to run multimedia applications on Android Q and parse log files
- Generated LSTM models using Neural Architecture Search (NAS) to estimate QoS parameters for minimal power consumption

Publicis Groupe

DATA SCIENCE INTERN

Bengaluru, India

May. 2017 - Jul. 2017

- Rebuilt the "pandas" library in python and converted it into libraries in Apache Spark, Apache Flink, and TensorFlow
- Created clusters in TensorFlow for generating a distributed network that enabled efficient data processing
- Performed big data analytics using Apache Spark, Hadoop and Microsoft Azure

Research Experience

Google Scholar: [\[LINK\]](#) | Research Interests: Computer Vision, Natural Language Processing, Signal Processing

Stanford Vision and Learning Lab

GRADUATE RESEARCHER

Stanford, CA

Sep. 2020 - Jan. 2021

- Worked on robot learning for intuitive human-robot interaction using Computer Vision at the Stanford Vision and Learning Lab (SVL)
- Researched improvements in human-robot interaction performance obtained using parallelized learning and generated mesh grids for parallel Reinforcement Learning on Gibson using Blender

Massachusetts Institute of Technology

RESEARCH ASSISTANT

Boston, MA

Jul. 2020 - Aug. 2020

- Worked on bridging the gap between human intelligence and machine intelligence at the MIT Center for Brains, Minds, and Machines (CBMM)
- Researched the synergy between Computer Vision and Physiological Optics with a focus on low-level vision, binocular vision, accommodation, and vision modeling based on how human vision is interpreted by our brains

Purdue University DARPA SC2 Research

RESEARCH ASSISTANT

West Lafayette, IN

May. 2018 - May. 2020

- Researcher at the Purdue DARPA SC2 Research Team (BAM!) in collaboration with Texas A&M
- Qualified for the final round (will take place in Dec 2020) of the DARPA SC2 challenge and won \$750,000 in funding from DARPA for finishing in the top 10 teams in the 1st round and \$375,000 for finishing in the top 5 teams in the 2nd round

Purdue University Summer Undergraduate Research Fellowship

RESEARCH FELLOW

West Lafayette, IN

May. 2018 - Aug. 2018

- Designed Deep Learning models for modulation classification with a focus on online training for network tuning using PCA, LDA, and Autoencoders aided by selective SNR training for Wireless Signal Modulation Classification using Deep Neural Networks with Prof. Aly El Gamal
- Currently hold the record for the highest classification accuracy (99%) with the RML dataset (previous record – 93%)

Publications

ACCEPTED/PUBLISHED

[J3] **Sharan Ramjee**, Shengtai Ju, Diyu Yang, Xiaoyu Liu, Aly El Gamal, Yonina C. Eldar. “Ensemble Wrapper Subsampling for Deep Modulation Classification”. IEEE Transactions on Cognitive Communications and Networking (**TCCN**), Aug. 2021 [\[LINK\]](#)

[J2] Xingchen Wang, Shengtai Ju, Xiwen Zhang, **Sharan Ramjee**, Aly El Gamal. “Efficient Training of Deep Classifiers for Wireless Source Identification using Test SNR Estimates”. IEEE Wireless Communication Letters (**WCL**), Apr. 2020 [\[LINK\]](#)

[C1] Xiwen Zhang, Tolunay Seyfi, Shengtai Ju, **Sharan Ramjee**, Aly El Gamal, Yonina C. Eldar. “Deep Learning for Interference Identification: Band, Training SNR, and Sample Selection”. IEEE Signal Processing Advances in Wireless Communications (**SPAWC**), Jul. 2019 [\[LINK\]](#)

[J1] **Sharan Ramjee**, Shengtai Ju, Diyu Yang, Xiaoyu Liu, Aly El Gamal, Yonina C. Eldar. “Fast Deep Learning for Automatic Modulation Classification”. IEEE Machine Learning for Communications Emerging Technologies Initiatives (**MLCETI**), Jan. 2019 [\[LINK\]](#)

UNDER REVIEW

[J4] **Sharan Ramjee**, Aly El Gamal. “Efficient Wrapper Feature Selection using Autoencoder and Model Based Elimination”. Submitted to IEEE Letters of the Computer Society (**LOCS**), May. 2020 [\[PREPRINT\]](#)

Teaching Assistantships

Web Applications

CS 142 - STANFORD UNIVERSITY

Stanford, CA

Winter 2022

Deep Learning

CS 230 [HEAD TA] - STANFORD UNIVERSITY

Stanford, CA

Fall 2021

Computer Organization & Systems

CS 107 - STANFORD UNIVERSITY

Stanford, CA

Spring 2021

Microprocessor Systems and Interfacing

ECE 362 - PURDUE UNIVERSITY

West Lafayette, IN

Spring 2019

ASIC Design Laboratory

ECE 337 - PURDUE UNIVERSITY

West Lafayette, IN

Spring 2019

Advanced C Programming

ECE 264 - PURDUE UNIVERSITY

West Lafayette, IN

Spring 2019

Electronic Measurement Techniques

ECE 207 - PURDUE UNIVERSITY

West Lafayette, IN

Fall 2018

Programming Applications For Engineers

CS 159 - PURDUE UNIVERSITY

West Lafayette, IN

Spring 2018

Talks

RESEARCH TALKS

Deep Learning for Interference Identification: Band, Training SNR, and Sample Selection

IEEE SIGNAL PROCESSING ADVANCES IN WIRELESS COMMUNICATIONS (SPAWC) 2019 [\[LINK\]](#)

Cannes, France

Jul. 2019

Deep Neural Network Architectures for Modulation Classification using PCA

THE SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP (SURF) SYMPOSIUM [\[LINK\]](#)

West Lafayette, IN

Aug. 2018

A PyTorch Framework for Automatic Modulation Classification

THE SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP (SURF) SYMPOSIUM [\[LINK\]](#)

West Lafayette, IN

Aug. 2018

OTHER TALKS

FLITE: Focusing LITE for Memory-Efficient Meta Learning

STANFORD UNIVERSITY CS 330: DEEP MULTI-TASK AND META LEARNING [\[LINK\]](#)

Stanford, CA

Dec. 2021

Project Aerial: CAASM for Palo Alto Networks

STANFORD UNIVERSITY EE 205: PRODUCT MANAGEMENT FOR ELECTRICAL ENGINEERS AND COMPUTER SCIENTISTS [\[LINK\]](#)

Stanford, CA

Dec. 2021

Context-Aware Action Recognition via Spatial and Temporal Transformer Networks

STANFORD UNIVERSITY CS 231N: CONVOLUTIONAL NEURAL NETWORKS FOR VISUAL RECOGNITION [\[LINK\]](#)

Stanford, CA

Jun. 2021

Unsupervised Neural Network Models of the Ventral Visual Stream

STANFORD UNIVERSITY CS 431: HIGH-LEVEL VISION: FROM NEURONS TO DEEP NEURAL NETWORKS [\[LINK\]](#)

Stanford, CA

Mar. 2021

Single-Image Stereo Depth Estimation using GANs

STANFORD UNIVERSITY CS 231A: COMPUTER VISION, FROM 3D RECONSTRUCTION TO RECOGNITION [\[LINK\]](#)

Stanford, CA

Mar. 2021

Super-Resolution of Low-Quality Images for Realtime Pothole Detection

STANFORD UNIVERSITY CS 230: DEEP LEARNING [\[LINK\]](#)

Stanford, CA

Nov. 2020

Food Locker

PURDUE UNIVERSITY ELECTRICAL AND COMPUTER ENGINEERING SENIOR DESIGN [\[LINK\]](#)

West Lafayette, IN

May. 2020

Model Distillation

GOOGLE CLOUD AI [\[LINK\]](#)

Seattle, WA

Dec. 2019

QoS Optimization with ML

QUALCOMM MACHINE LEARNING ANALYSIS [\[LINK\]](#)

San Diego, CA

Aug. 2019

An Introduction to Deep Learning for Style Transfer

PURDUE IEEE COMPUTER SOCIETY (CSOCIETY) [\[LINK\]](#)

West Lafayette, IN

Jan. 2018

Skills

Languages	Python, C, C++, Java, JavaScript, Solidity, Shell Scripting, MATLAB
Hardware	System Verilog, Embedded C, Assembly, LTspice
Libraries	PyTorch, TensorFlow, Transformers, OpenCV, XGBoost, scikit-learn
Other	Git, \LaTeX
OS	Android, Linux, ROS

Open Source Contributions

TensorFlow

GOOGLE SUMMER OF CODE DEVELOPER

Remote

May. 2020 - Aug. 2020

- Worked on implementing key research data in TensorFlow Datasets (TFDS)

OpenMRS

GOOGLE CODE-IN DEVELOPER

Remote

Dec. 2014 - Feb. 2015

- Worked on detecting, documenting, and fixing bugs on the Open Medical Record System (OpenMRS) interface

Honors & Awards

Best Minimum Viable Product (MVP) Presentation, Stanford EE 205: Product Management

Dec. 2021

Best Product Opportunity Assessment (POA) Presentation, Stanford EE 205: Product Management

Nov. 2021

Tech Fellowship, Stanford TreeHacks

Jun. 2021

Honorable Mention, Stanford AIMI-HIAE COVID-19 Researchathon

Jun. 2020

Graduation with Highest Distinction, Purdue University

May. 2020

Ideas and Innovation Tournament (I²TC) Qualifier, Purdue University

Feb. 2020

Eta Kappa Nu (Beta Chapter) Outstanding Junior Scholarship, Purdue University

2019-2020

Eli Shay Scholarship, (3 times) Purdue University

2017-2020

Dean's List, (8 times) Purdue University

2016-2020

Wolfram Alpha Award, MadHacks (University of Wisconsin-Madison)

Nov 2018

Engineering Design Excellence Award, Purdue University

Dec. 2016

12th Board Exam Scholarship, DRDO

May. 2016

10th Board Exam Scholarship, DRDO

May. 2014

Activities

Stanford TreeHacks

TECH FELLOW [\[LINK\]](#)

Stanford, CA

Jun. 2021 - Present

- Working on improving the Stanford TreeHacks Hackathon experience as a part of the TreeHacks tech team
- Working on adding LinkedIn support for easier hackathon application processing and incorporating a project database for showcasing past projects

Purdue IEEE Computer Society (CSociety)

PRESIDENT [\[LINK\]](#)

West Lafayette, IN

Aug. 2017 - Aug. 2019

- Led several teams in the completion of projects for the Purdue Spark Challenge that is held every semester
- Served as the product manager for the 'Neural Style Transfer using Hardware Convolution' project (Spring 2019) and served as the head of the data analysis team for the 'QUEVIHN: Biomedical Robot' project (Fall 2018) [\[LINK\]](#)

Autonomous Motorsports Purdue (AMP)

SOFTWARE TEAM LEAD [\[LINK\]](#)

West Lafayette, IN

Nov. 2018 - Aug 2019

- Led the software team for the development of SLAM algorithms in preparation for the autonomous racing competition held every May [\[LINK\]](#)
- Successfully developed computer vision software using the YOLOv2 for the Velodyne LiDAR [\[LINK\]](#)
- Created onboarding documents to get new recruits up to speed with the Robot Operating System (ROS) framework

Undergraduate Research Society of Purdue (UGRSP)

FOUNDING AMBASSADOR [\[LINK\]](#)

West Lafayette, IN

Oct. 2018 - Aug. 2019

- Served as the founding ambassador for the College of Engineering to help guide students with research
- Taught students how to present their research, conduct literature reviews, write journal/conference papers
- Engaged in outreach and spreading awareness to recruit a diverse group of students that were passionate about research

Peer Reviews

CL2021, IEEE Communication Letters	Jun. 2021
WCL2021, IEEE Wireless Communication Letters	Jun. 2021
CL2021, IEEE Communication Letters	May. 2021
WCL2021, IEEE Wireless Communication Letters	Apr. 2021
TCCN21, IEEE Transactions on Cognitive Communications and Networking	Mar. 2021
CL2021, IEEE Communication Letters	Mar. 2021
NCC2021, National Conference on Communications	Mar. 2021
CL2021, IEEE Communication Letters	Feb. 2021
WCL2021, IEEE Wireless Communication Letters	Jan. 2021
WCL2020, IEEE Wireless Communication Letters	Jan. 2021
CVPR2021, Conference on Computer Vision and Pattern Recognition	Dec. 2020
WCL2020, IEEE Wireless Communication Letters	Sep. 2020
CL2020, IEEE Communication Letters	Sep. 2020
GC2020, IEEE GLOBECOM 2020 Workshop on Edge Learning over 5G Networks and Beyond	Aug. 2020
5GWF20, IEEE 3rd 5G World Forum	Jul. 2020
TCCN20, IEEE Transactions on Cognitive Communications and Networking	Jun. 2020
WCL2020, IEEE Wireless Communication Letters	May. 2020
TCCN20, IEEE Transactions on Cognitive Communications and Networking	Apr. 2020
TCOM19, IEEE Transactions on Communications	Feb. 2020
WCL2019, IEEE Wireless Communication Letters	Jan. 2020
CL2019, IEEE Communication Letters	Nov. 2019
SPAWC19, IEEE Signal Processing Advances in Wireless Communications	Jul. 2019

Certifications

Adventures in Design Thinking: A d.school Experience

STANFORD GRADUATE SUMMER INSTITUTE

Stanford

Sep. 2021

Deep Learning Specialization

COURSERA [\[LINK\]](#)

DeepLearning.AI

Dec. 2020

Machine Learning

COURSERA [\[LINK\]](#)

Stanford University

Sep. 2017

STANFORD UNIVERSITY

MS&E 472	Entrepreneurial Thought Leaders' Seminar
CS 329S	Machine Learning Systems Design
CS 259Q	Quantum Computing
CS 246	Mining Massive Data Sets
CS 522	Seminar in Artificial Intelligence in Healthcare
CS 330	Deep Multi-Task and Meta Learning
CS 251	Cryptocurrencies and Blockchain Technologies
EE 205	Product Management for Electrical Engineers and Computer Scientists
CS 523	Research Seminar in Computer Vision and Healthcare
CS 361	Engineering Design Optimization
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 142	Web Applications
CS 431	High-level Vision: From Neurons to Deep Neural Networks
CS 231A	Computer Vision, From 3D Reconstruction to Recognition
CS 224W	Machine Learning with Graphs
CS 224N	Natural Language Processing with Deep Learning
CS 300	Departmental Lecture Series
CS 230	Deep Learning
CS 229	Machine Learning
CS 221	Artificial Intelligence: Principles and Techniques

PURDUE UNIVERSITY

ECE 496	Deep Learning and Neural Networks
ECE 469	Operating Systems Engineering
ECE 404	Computer Security
ECE 368	Data Structures and Algorithms
ECE 362	Microprocessor Systems and Interfacing
ECE 337	ASIC Design Laboratory
ECE 296	Deep Learning for Wireless Communications
ECE 295	Introduction to Data Science