# Rajarathnam Balakrishnan

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## EDUCATION

**University of California, Berkeley** **Aug 2019 - May 2020**
Master of Engineering in Industrial Engineering and Operations Research
Track: Data Analytics and ML
*Technical Coursework:*
*Applications of Data Analysis, Applied Data Science with Venture Applications (Data-X), Optimization Analytics, Risk Modeling Simulation and Data Analysis*
*Leadership courses [The Coleman Fung Institute for Engineering Leadership]:*
*Finance, Industry Analysis, Organizational Behavior for Engineers, R&D Technology Management and Ethics, High Performance Teaming; Communications for Engineering Leaders*

**SRM Institute of Science and Technology, Chennai, India** **2013 - 2017**
Bachelor of Technology in Mechanical Engineering
Graduated First Class with Distinction | GPA: 9.44/10 | Top 2% in Cohort

## PROJECT EXPERIENCE

**FuSSI-Net: Fusion of Spatio-temporal Skeletons for Intention Prediction Network with Volvo Cars, USA** (*A collaborative research project between student teams at UC Berkeley and Chalmers University-Sweden, and Volvo Cars-USA and Sweden)* **Feb 2020 - May 2020**

Team member and Lead for 2 of the 3 subdivisions of the project | Team: 6 (Berkeley) & 6 (Chalmers) members

- Secured a position in the 6 member team of UC Berkeley out of 50+ applicants for the project
- Steered multiple work streams of the research by leveraging previous knowledge in machine learning.
- Accelerated different component training experiments by pre-processing raw dataset to all required formats.
- Educated team members on the basics of object detection, image classification, CNNs and TensorFlow.
- Spearheaded multiple collaborative integration meetings with Chalmers University Team to integrate both work streams for performance improvements.
- Brainstormed and championed initiatives to integrate features across work streams.
- Verified night time detection improvements using style transfer GAN to generate night time like data from day time images.
- Achieved the highest AP score of 0.89 for the early-fusion based classifier by experimenting different training routines based on previous experience.
- Built the end to end integration of different components resulting in four models that take an input video and provide a video output with all the analysis information without any intermediate break-downs.
- Benchmarked different individual components and end to end frameworks by utilizing customized codes.
- Co-authored a research paper (https://arxiv.org/abs/2005.07796) and submitted for the 2020 IEEE Asilomar Conference on Signals, Systems and Computers.

**Pedestrian and Vehicle Recognition for Autonomous Driving** **Aug 2019 - May 2020**
MEng Capstone Project | Team Lead | Team: 4 members

- Selected as Lead by team members and advisor based on previous coursework on machine learning.
- Advised, planned and supervised project plan in collaboration with Project Manager and Advisor.
- Curated and referred learning resources for basics and programming for deep learning with focus on CNNs.
- Organized weekly team meetings and clarified doubts and brainstormed improvements with team members.
- Reviewed research papers and collaborated with team members to design a novel object detection architecture.
- Refined and coded scripts for classifier and detection layer implementation in TensorFlow.

**Start-up Success Prediction** **Feb 2020 - May 2020**

MEng Course Project | Team: 4 members

- Initiated different data cleaning techniques to clean the raw dataset.
- Consulted with different members to provide cleaned and complete dataset as per their requirements for modelling.

## AWARDS

**May 2020:** Best Project Award for the Volvo Research Project in DataX course (Spring semester) at UC Berkeley.
**Feb 2016**: Merit Based Scholarship award at SRM University for Junior Year Undergraduate Degree.

## SKILLS

- Python, TensorFlow, Keras, NumPy, Pandas, R Programming, Tableau, SQL, MS Office
- Problem Solving, Communication, Machine Learning, Exploratory Data Analysis, Mathematical Modeling, Statistics, Probability, Deep Learning

## ADDITIONAL COURSEWORK

**Neural Networks and Deep Learning, Coursera (Online)** **Oct 2019**

*Neural networks, forward propagation and backpropagation, building and training deep neural networks to computer vision tasks*

**Introduction to Computer Science and Programming using Python, MITx-edX (Online)** **Nov 2018**

*Python basics, functions, structures, OOP, complexity*

**Certification Program in Data Science, UpX Academy (Online)** **Sept 2017 - Mar 2018**

*Exploratory Data Analysis, Python, R, Tableau, Machine Learning Basics and case studies, Deep Learning Introduction*