Roshan Santhosh

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EDUCATION

University of Pennsylvania
Philadelphia, PA
MSE in Data Science — Expected Aug'20

Indian Institute of Technology
Chennai, India
B.Tech in Engineering Design
M.Tech in Biomedical Design
CGPA : 8.14/10
Aug'11 – May'16

WORK EXPERIENCE

Business Analyst, Risk and Information Management Team, American Express - *Gurgaon* (Jun'16-Jun'18)
- Developed and maintained credit risk assessment models for all non-US markets covering **12M** Amex customers
- Primary developer of **AAT**, an automated market-specific model adjustment tool utilizing SAS and Shell scripting

Deep Learning Programmer, Computational Breast Imaging Group - *UPenn* (Sep'18-Present)
- Develop Deep Learning frameworks for prediction of Breast cancer using longitudinal patient Mammogram data

Project Analyst, Wharton Analytics Fellow - *The Wharton School* (Oct'18-Present)
- Work with Citi Ventures to develop Machine learning models to predict customer churn rates

Freelancing Data Scientist, Freelancer.com (Feb'17-Jun'18)
- Provided Machine learning analysis/consultation on **20+ projects** for clients from US, Germany and Australia

Intern, System Insights - *Chennai* (Jan'15-Jun'15)
- Built Machine learning models for **predicting 3D printing quality parameters** based on 3D printing process variables

PROJECTS

Brain Tumor Segmentation using Conditional Random Fields, *Master's Thesis* (Aug'15 – May'16)
- Developed Stacked Denoising Autoencoder-CRF (**SDA-CRF**) models for brain tumor segmentation on **BRATS 2015** data
- Achieved competitive Dice scores of **0.81**, **0.78** and **0.73** for whole, active and core tumor classification

Image Segmentation of Satellite Imagery, *Dymaxion Labs* (Oct'18 – Present)
- Segmentation of slum establishments from satellite images using Deep Learning frameworks like U-Net and FCNN

Design of Robotic Surgical Arm, *Robotics Lab, IIT Madras* (May'13 –Jun'13)
- Developed a working model to simulate **Remote Center of Motion** (RCM) in a 4-bar mechanism
- Model was developed using Arduino and Servo motors; GUI was developed in Matlab that interfaced with Arduino

Design of Neural Networks using NEAT, *Self-initiated project* (Jan'17 –Feb'17)
- Designed a GUI application using pygame and NEAT-Python packages that applied NEAT for playing the FlappyBird game

Q-Learning based Tic-Tac-Toe agent, Self-*initiated project* (Mar'17)
- Developed a GUI application using wxPython for training and user testing of Q-Learning based Tic-Tac-Toe agent
- Ideated the use of agent action history in adjusting Q-values, which resulted in great improvement in agent performance

Optimization of Bayesian Network structure using Genetic Algorithm, *Self-initiated project* (Jun'17-Jul'17)
- Utilized Genetic algorithm for optimizing Bayesian Networks structure to improve performance for classification tasks

Deep Learning Methods for Classification with Limited Datasets, *CIS 545 Project* (Oct'18 –Dec'18)
- Evaluated the performance of Siamese Networks against CNNs for face and digit recognition using small datasets

Hidden Markov Model visualization app, *Self-initiated project* (Jul'18)

ACHIEVEMENTS

- 3rd place in Data Analytics challenge at Inter IIT Tech Meet 2016 representing IIT Madras
- Top 25% in 5 Kaggle Competitions (Profile : rsk2327)
  - Liberty Mutual Group: Property Inspection Prediction challenge
  - The Analytics Edge (Spring 2015) course competition
  - Sberbank Russian Housing Market challenge
  - Shelter Animal Outcomes challenge

LEADERSHIP

President, Penn Data Science Group, *UPenn* (Dec'18-Present)
Board Member, Penn Data Science Group, *UPenn* (Oct'18-Dec'18)
- Coordinate activities and projects for PDSG. Currently handling projects in collaboration with Google and Dymaxion Labs

Head, Analytics Club, *IIT Madras* (Jun'15-May'16)
- Led a team of 6 to manage sessions for **350+** club members. Mentored **30+** students as part of 5 club projects

Course Mentor, Coursera (Feb'16-Jun'18)
- Served as mentor for 3 courses of UoW Machine Learning specialization, helping students with coursework and assignment

COURSEWORK

Introduction to Big Data with Apache Spark
Data Structures and Algorithms (Python)
Big Data Analytics (Advanced Track)
Fast.AI
Time Series Analysis
Statistical Learning
Scalable Machine Learning
Artificial Intelligence
Machine Learning

SKILLS

Python R SAS PySpark Keras PyTorch Google Cloud TensorFlow Theano C++ Linux Java SQL