Siddhartha Mishra

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Education

B.Tech. in Computer Science and Engineering and Eng. Science
Indian Institute of Technology(IIT), Hyderabad, 8.8/10 GPA *2015 - 2019*

Central Board of Secondary Education
Higher Secondary, 95.4% *2013 - 2015*

Central Board of Secondary Education
Secondary, 10/10 CGPA *2012 - 2013*

Interests

Machine Learning and AI, Bayesian/Statistical Machine Learning, Natural Language Processing

Experience

Goldman Sachs Private Ltd. **Bangalore**
Analyst *May 2019 - Present*
- Working in Enterprise machine learning platform services team on services such as metric analysis, alert prediction and resolution.
- Added features to big data log analysis and system health check platform for realtime analysis and alerting.

Goldman Sachs Private Ltd. **Bangalore**
Summer Analyst *May-July 2018*
- Worked on Telemetry analysis in Enterprise Platform of Banking Services.
- Designed new models to predict possible errors using Machine learning Models before they occur.

Coala, Python Software Foundation
Developer *May 2017*
- Contributed to the open source community by helping coala improve the design of their caching framework and added other structural/performance optimizations in their codebase.

Research/Projects

Multiclass Recurrent Gaussian Process for NLP problems [Code]
Advisor: Dr. Srijith P.K. *February 2019 - Present*
- Formulated a multiclass model for recurrent gaussian process using Variational Inference and ELBO gradient optimisation.
- Applied the model on various NLP problems such as Parts of Speech Tagging, Sequence encoding etc. with lesser data to utilize a bayesian model.

Query Segmentation using LSTMs [Code]
Advisor: Dr. Maunendra Deskar *October 2018*
- Designed a novel approach to Query Segmentation by mapping it to a sequence tagging problem
- Used bi-directional LSTMs with/without CRF layers on webis-qsec dataset.

Deep reinforcement Learning model for self driving cars [Code]
Advisor: Dr. Vineeth N. Balasubramanian *March 2018*
- Simulated environment using Mario Kart game.
- Used Asynchronous Actor Critic Advantage (A3C) to increase exploration rate and hence reducing training time in comparison to methods such as DQN.
- Designed custom approximate reward function by a hybrid pipeline to increase granularity of reward to accelerate learning.

Story similarity Detection/Clustering [Code]

Advisor: Dr. Manish Singh *Feb 2018*

- Used NLP language models and LSH for efficient similarity hashing using TF-IDF.
- Used Community Detection for a non-euclidean model on Tweets and Reuters data for news to find similar stories.
- Used a hybrid model to get the best of both worlds to get optimal performance.

Media Server implementing MPEG-DASH and HLS protocols [Code]

Advisor: Dr. Anthony Franklin *Jan 2018*

- Segment the media or streaming buffer to make a playlist using ffmpeg. to implement the respective protocols to compare modern live streaming protocol's performance.
- Added a layer of END-to-END encryption to make the media server secure.

Parallel Johnson's Algorithm and Optimized Matrix Chain Multiplication [Code]

Advisor: Dr. Sathya Perri *Nov 2017*

- Analysed efficient way to Parallelize Johnson's Algorithm and the underlying data structures used in it.
- Implemented chain multiplication in a concurrent way for independent states to optimize computation performance to accelerate Dynamic Programming.

Epidemic analysis - Research Internship

Advisor: Dr. M.V.P. Rao. *Oct 2017*

- Analysed several research work done on how data analysis can be used to predict/control the spread of Epidemic.
- Made an android app to collect public data related to epidemics which shows visualization of the analysis of that data using bar graphs and heatmaps updated dynamically.

Asynchronous socket framework for Multiplayer game [Code]

Advisor: Saurabh Joshi *March 2017*

- Implemented a Game Engine using OpenGL, SDL and built an Asynchronous socket framework with a central server model using sockets.h and thread standard UNIX socket library to asynchronously send/ receive messages and maintain consistency in the graphics displayed across connected devices.
- It's a Multiplayer FPS game for Desktop platform.

AI solving N-Puzzle using Functional programming [Code]

Advisor: Dr. Saurabh Joshi *Feb 2017*

- Implemented a AI that solves N-Puzzle and visualization using OpenGL in Haskell.

Relevant Coursework

- **Machine Learning**: Applied Machine Learning, Deep Learning, Theoretical Deep Learning, Bayesian Data Analysis, Theory of Learning and Kernel Methods
- **Data Science**: Data Mining, Information Retrieval, Information Theory
- **Computer Science**: Distributed Computing, Parallel and Concurrent Programming, Computer Networks, Operating Systems, Database management system, Algebra of Computer Science, Computer Network and Security, Compilers, Advanced Data Structures and Algorithms, Discrete Structures
- **Mathematics**: Calculus, Linear Algebra, Differential Equations, Probability, Statistics

Academic Achievments

- Academic Excellence Award for highest SGPA in my stream : (3rd and 4th semester)
- Graduated 2nd (GPA wise) in my batch.
- Qualified for ACM ICPC Amritapuri regionals and Kharagpur regionals 2017. Secured 49th rank/265 teams in Amritapuri regionals 2017.
- Secured A+ grade(Top 5%) in Probability,Information Theory and DBMS-I
- KVPY Fellowship by Indian Institute of Science, Bangalore securing All India rank 210
- Ranked 3516(97.66 percentile) in JEE Advanced out of 150,000 candidates.
- Ranked 2554(99.8 percentile) in JEE Main out of 1.3 million candidates.
- Qualified INMO (Indian National Mathematics Olympiad) by clearing two stage regionals KVS-JMO and RMO, securing All India rank 7th.

Academic Responsibilities

Teaching

Statistics-MA2140 — **Prof. J. Balasubramaniam**
Teaching Assistant — *June 2019*

Networks-I — **Prof. Antony Franklin**
Teaching Assistant — *Oct 2018*

Probability-MA2110 — **Prof. J. Balasubramaniam**
Teaching Assistant — *Oct 2017*

- Helped the professors with making and grading assignments and exam papers. Assisted students with any doubts or challenges they faced during the course or assignments.

Position of Responsibility

Lambda- Development Club
Coordinator — *Jan 2017*

Infero-Competitive Programming Club
Core team member — *Jan 2017*

Robotics Club
Coordinator — *2016-2017*

- Mentored and guided juniors across streams by sharing my knowledge and experience of coding by conducting interactive hands on sessions and assisting them in projects.

Technical skills

Languages: C++, C , Python, Go, Java, Android, C#, MySQL, Haskell, Prolog, LLVM, MIPS

ML/Data Science: Tensorflow, PyTorch, Theano, Numpy, OpenCV, Scipy, SKLearn, Pandas, Matlab

Devops/Tools: Kubernetes, Prometheus, Kafka, Kibana, Elastic Search

Web: HTML, CSS, JavaScript, Angular JS, Node JS, Flask, MongoDB, SQLite

Misc.: AutoCAD, SolidEdge, ModelSim, Arduino, MS Office