Shreyas Kulkarni

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shreyas-kulkarni

Education

2014 – 2018 **Indian Institute of Technology, Guwahati**
Bachelor of Technology in *Engineering Physics* and a Minor in *Mathematics*.

Experience

Sept 2019 – Present **Research Assistant – National University of Singapore (NUS)**
School of Computing - AI Security Group
- *Prof. Prateek Saxena, School of Computing*

- Designing verification systems and testing methodologies for Certified Defense of neural networks against adversarial attacks.
- Working on other methods of defenses such as Adversarial Training, Attack Detection in the Threat Models in the field of AI security.

July 2018 – Sept 2019 **Software Development Engineer – Symantec, Bangalore**
Big Data - Data Ingestion and Analytics team

- Worked on Big Data Platform, ADL (Authoritative Data Lake), a Hadoop cluster on AWS.
- Developed a library to be used by various teams across Symantec for running live SQL queries on high volume streaming data from Kafka using the new Structured Streaming engine in Spark.
- Added support for new data sources in Storm & Spark based data ingestion pipeline.
- Responsible for storing security telemetry data received from multiple Symantec endpoint products and writing analytical applications using Apache Spark in the area of Cyber Security.

May – July 2017 **Research Intern – Hanyang University, South Korea**
Computer Vision Lab
- *Prof. Frank Rhee, Dept. of ECE*

- Worked on data preprocessing with respect to the membership values to obtain the optimal and stable data dependent fuzzifier range for Alpha-planes of General Type-2 Fuzzy sets.
- Developed a novel algorithm to determine Optimal Fuzzifier Range for Alpha-planes of Type-2 Fuzzy sets, and presented it at the *IEEE International Conference on Fuzzy Systems*, Rio, 2018.

Publications

July 2018 **Shreyas Kulkarni**, Rishabh Agrawal, and Frank Chung-Hoon Rhee, *"Determining the Optimal Fuzzifier Range for Alpha-Planes of General Type-2 Fuzzy Sets,"* IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Brazil, 2018.

Major Projects

Aug – Oct 2016 **Generating Fractals and Julia Sets**
- *Prof. Jiten Kalita, Dept. of Mathematics, IIT Guwahati*

- Plotted the Julia set for different Complex valued functions using Java and wrote a term paper on analyzing and generating Julia sets using Newton Raphson method.
- Invited to give talk in SIAM about "Fractals, Newton's method and Julia set".

June 2016 **Search Utility for e-libraries**
- *Self Project*
- Designed an intelligent search engine to index e-books collection and give relevant results based on custom ranking functions in text as well as in audio format for visually challenged people.
- Wrote ranking functions from scratch based on tf-idf model.

July 2018 - Apr 2019 **Random Graphs**
- *Prof. Sameer Kamal, Dept. of Mathematics, IIT Guwahati*
- Studied Branching Processes and the Phase Transitions in the Erdős-Rényi Random Graph.

Feb – Mar 2017 **Pattern Recognition - ML**
- *Prof. Suresh Sundaram, Dept. of EEE, IIT Guwahati*
- Built a generative three class Bayes classifier for character recognition.
- Implemented face recognition on unseen images using KL Transform and reconstructed original faces using different sets of obtained Eigenfaces.

Achievements

2012 – 2019
- **Speaker, SIAM**: Invited to give talk in the SIAM (Society for Industrial and Applied Mathematics) Popular Lecture Series of IIT Guwahati Chapter about "Fractals, Newton's method and Julia set".
- Awarded **INSPIRE** (**In**novation in **S**cience **P**ursuit for **I**nspired **Re**search) Scholarship by Department of Science and Technology.
- Joint Entrance Examination 2014: Secured **99.63 percentile** among **1.2** million applicants.
- Recipient of **Symantec WOW Award** for contributions and achievements year-round.
- Recipient of **PMC Merit Scholarship**.

Technical Skills

Programming	Python, Java, Scala, C++, C, MySQL
Statistical Tools	MATLAB, Octave
Technologies	Spark, Storm, Kafka, Hadoop, Elasticsearch, Hive, Oozie

Relevant Coursework

Mathematics	Linear Algebra, Statistics, Advanced Probability, Real Analysis, Differential Equations
Computer Science	Pattern Recognition and Machine Learning, Introduction to Programming, Design and Analysis of Algorithms (Coursera - Stanford), Introduction to Big Data (Coursera - UCSD), Neural Networks and Deep Learning (deeplearning.ai)
Physics	Computational Physics, Monte Carlo Simulations, Statistical Mechanics
Others	Game Theory and Industrial Organization, Economics of Uncertainty