


Shreyas Kulkarni

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 [shreyas269.github.io](https://github.com/shreyas269)

Education

- 2020–Present **University of Massachusetts Amherst**
MS/PhD in Computer Science (GPA: 4.0/4.0)
- 2014–2018 **Indian Institute of Technology, Guwahati**
B.Tech in Engineering Physics, Minor in Mathematics

Experience

- Sept 2019 – **Research Assistant – National University of Singapore (NUS)**
July 2020 School of Computing - AI Security Group
- *Dr. Prateek Saxena, School of Computing*
- Designing verification systems and testing methodologies for Certified Defense of neural networks against adversarial attacks.
 - Delivered a lecture series on Differential Privacy to the Security group at NUS.
- July 2018 – **Software Development Engineer – Symantec, Bangalore**
Sept 2019 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 **Research Intern – Hanyang University, South Korea**
2017 Computer Vision Lab
- *Dr. 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*,” in 2018 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE).

Graduate Coursework

- Fall 2020 Graduate Machine Learning, Advanced Information Assurance
- Planned Advanced Algorithms, Optimization in CS, Probabilistic Graphical Models, Algorithmic Fairness and Strategic Behavior

Research Activities

- 2012 – 2019
- *Sub-reviewer*: IEEE S&P ("Oakland") 2020.
 - *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".

Ongoing Projects

- Aug 2020 – Present
- Out-of-distribution Detection**
- Designing algorithms for outlier detection in deep neural networks.

Past Projects

- Aug – Oct 2016
- Generating Fractals and Julia Sets**
- *Dr. 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**
- *Dr. 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**
- *Dr. 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
- Awarded **INSPIRE** (Innovation in Science Pursuit for Inspired Research) 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, MATLAB

Technologies SPARK, STORM, KAFKA, HADOOP, ELASTICSEARCH, HIVE, OOZIE