Priyanka Nath

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Education

Stony Brook University *(SUNY Stony Brook)* – New York, USA *August, 2019 - Present*
Master of Science (Computer Science)

KIIT University *(formerly Kalinga Institute Of Industrial Technology)* – Bhubaneshwar, India *July, 2019 - 8.79 / 10.0*
Bachelor of Technology, Information Technology

Experience

Goldman Sachs - New York City *July, 2020 - August, 2020*
Summer Analyst, Consumer and Investment Management Division.

Amazon.com, Inc. - Bengaluru, India *March, 2019 - August, 2019*
Software Development Engineering Intern, Amazon Web Services.

Indian Statistical Institute – Kolkata, India *May, 2018 - July, 2018*
Advisor - Prof. Bimal Kumar Roy
Research Intern at R. C. Bose Centre for Cryptology and Security, Indian Statistical Institute.

Indian Statistical Institute – Kolkata, India *May, 2017 - July, 2017*
Advisor - Prof. Ansuman Banerjee
Research Intern under the *Summer Internship Program in Cryptology 2017*, R. C. Bose Centre for Cryptology and Security, Indian Statistical Institute (funded by Microsoft Research India).

Projects

Health Monitoring Dashboard for ES Clusters - Goldman Sachs *July, 2020 - August 2020*
- Created a Spring Boot API to expose health monitoring metrics of existing elasticsearch clusters.
- Visualized these metrics into a color coded health monitoring dashboard to provide a holistic view of all the clusters and improve user experience.

API-Level Metrics for Amazon Elasticsearch Service - Amazon Web Services *March, 2019 - August 2019*
- Evaluated existing metrics for Amazon Elasticsearch Service (search-engine as a service, part of Amazon Web Services) and their limitations.
- Prepared and presented a comparative study in support of newly proposed metrics based on requirements, scalability, resource cost, performance impact and data pipeline latency.
- Designed and implemented 19 new API-level metrics for monitoring, faster diagnosis and root-causing of problems in clusters running the service, thereby improving service availability and customer experience.

Drug Risk Analysis using ANNs
- Applied supervised learning using Artificial Neural Networks (ANN) to classify an individual as a drug/alcohol user or not, based on a five-factor personality model. Predicted alcoholism with 98.7% accuracy and volatile substance abusers with 81%. accuracy.
- Experimented with the number of neurons and hidden layers to predict the last time of use of drugs with 71.9% accuracy and alcohol with a 49.1% accuracy.
- Optimized prediction of recency of drug use and increased accuracy to 96.4% by implementing k-nearest neighbors classification.

Vulnerability Analysis of Linux System Calls – Indian Statistical Institute *May, 2017 - July, 2017*
- Developed an operating system call pattern matching & analysis application for Linux to detect software vulnerabilities.
- Using inputs generated by an automated fuzzer, American Fuzzy Lop (AFL), to detect malicious binaries.
- Summer internship project, funded by the Defence Research and Development Organisation (DRDO), Government of India.

Principal Component Analysis using GPUs
- Implemented dimensionality reduction by applying PCA on Fischer's Iris dataset using C.
- Optimized the compute-intensive process by parallelizing it in CUDA-C by using GPUs.
- Applied k-means clustering using scikit to verify that the reduction in the number of features did not compromise the information stored in the dataset.

Analysis of Dimensionality Reduction Methods
- Comparative study of different dimensionality reduction methods - UMAP, t-SNE, t-SNE with PCA and PCA.
- Collected quantative and qualitative metrics like time complexity , normalized mutual score, etc. on different datasets which concluded UMAP to be the best in terms of overall performance

Technical Skills

Programming – Coded mainly in **C, Python.** Proficient in coding with C++ and Java.
Web – HTML, CSS, JavaScript, Spring. **OS –** Linux, Windows. **Visualization Tools –** matplotlib, seaborn.
Development Tools – SQL (MySQL, Oracle), Latex.
Machine Learning Tools – scikit, MATLAB, R, TensorFlow, sklearn, keras, PyTorch.

Relevant Courses Taken

Data Science Fundamentals, Computer Vision, Natural Language Processing, Cryptography, Linear Algebra, Data Structures & Algorithms, Object Oriented Programming, Probability & Statistics, Discrete Mathematics, Computer Networking, Operating Systems, Database Management Systems.

Publications

Kumari, Divya, Priyanka Nath, Sumran Kilam, and Aleena Swetapadma. **"Volatile Substance Abuse: A Nearest Neighbor Based Analysis."** In International Conference on Innovative Technologies in Engineering (ICITE), 2018.

Kumari, Divya, Sumran Kilam, Priyanka Nath, and Aleena Swetapadma. **"Prediction of alcohol abused individuals using artificial neural network."** International Journal of Information Technology 10, no. 2 (2018): 233-237.

Nath, Priyanka, Sumran Kilam, and Aleena Swetapadma. **"A machine learning approach to predict volatile substance abuse for drug risk analysis."** In Research in Computational Intelligence and Communication Networks (ICRCICN), 2017 Third International Conference on, pp. 255-258. IEEE, 2017.

Honors & Achievements

- Secured 4th position among 11,000 participants in the 4th CSI National Programming Contest 2017 organised by the Computer Society Of India.
- Won 2nd place in HelloWeb Hackathon 2016 hosted by the MozillaBBSR Club by designing a teaching kit to introduce kids to programming.
- Secured a perfect score (100%) in Mathematics in statewide Secondary Examination, 2013 among 1,020,000 students.
- Awarded Chitroprobha Upadhi Certification by Bengal Music College, Kolkata, India in 2012 on completing a 6–year course on Painting.