Sayali Anil Alatkar

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I'm a first-year CS Ph.D. at UW-Madison with a research focus in Computer Security and Privacy.

Education

2020–2026   **Ph.D. in Computer Science**, *University of Wisconsin-Madison*, Madison, WI, USA.
Courses taken: CS642: Introduction to Information Security(F'20), CS 839: Core Topics in Computing(F'20), CS 570: Introduction to HCI(S'21), CS 776: Advanced Bioinformatics(S'21)
GPA: 3.88/4

2018–2020   **M.S. in Computer Science**, *Stony Brook University*, Stony Brook, NY, USA.
Master Thesis: Detecting Smart Home Activity through Network Traffic Signatures
Thesis Advisor: Prof. Samir Das
GPA: 3.54/4

2014–2018   **B.E. in Computer Engineering**, *Pune University*, Pune, MH, India.
GPA: 3.7/4

Experience

2020   **Teaching Assistant**, *University of Wisconsin-Madison*, Madison, WI, USA.
CS 220: Data Programming II

2019–2020   **Teaching Assistant**, *Stony Brook University*, Stony Brook, NY, USA.
CSE 311: Systems Administration (2020)
CSE 312: Legal, Social, and Ethical Issues in Information Systems (2019)

2019   **Software Developer Intern**, *Siemens Corporate Research*, Princeton, NJ, USA.
Worked with Cybersecurity Research Group under Dr. Enrico Lovat
- Researched on techniques for homograph attack detection on internationalized domain names (IDNs)
- Implemented algorithm from literature for OCR-based homograph attack detection over IDNs containing non-ASCII characters
- Designed algorithm for detecting homograph IDNs containing ASCII characters
- Developed features like image-upload, full-text search, and, automated news template generation and email delivery response for Siemens Cyber Threat Intelligence News Portal

2017–2018   **Software Developer Intern**, *BMC, Inc.*, Pune, India.
Developed a POC for an ETL tool
- The tool extracted millions of records from the company's proprietary database through REST APIs, cleansed that data and translated it to a format that is compliant with the standards. Also, devised techniques to efficiently store it on a local server for future processing. Further performed aggregation functions like count, average, sum and, variance on the data and loaded it back onto the company's database.

Ongoing Research Projects

2021 - Present   **Smart Home security**.
Researching the security and privacy breaches of consumer IoT devices outside the NAT; Simultaneously identifying techniques to protect smart home devices from network-based attacks.

| 2021 - Present | **Predicting disease phenotype from genotype for single-cell omics**. |
| | The research goal is to apply machine learning algorithms to better understand and use the recently published single-cell genomics data to improve disease prediction rates. Currently developing a machine learning framework to predict disease phenotype from scRNA seq data for diseases like Alzheimer's while incorporating prior knowledge through biological networks. |

Skills

Languages	Python(proficient), C++(intermediate), C(familiarity)
Tools	Tensorflow, Jersey, Scipy, Scikit-learn, Pytorch, Latex, MS Office(Word, PowerPoint, Excel), Linux(Ubuntu), Pandas, NLTK, z3(SMT Solver) programming, Flask, Git, IBM DB2, IBM Data Studio, Oxygen XML, Django, Tesseract, openCV, virtualbox
Database	MySQL, MongoDB, PostgreSQL

Academic Projects

2019	**IoT Security and Verfication Engine**.
	Developed IoT policy conflict detection and resolution engine that translates IoT policies to Z3-based SMT programs for automatically detecting the violations and resolving them using a precedence mechanism.
2019	**Scene Classification**.
	Implemented a tool for classifying the scenes from the show, Big Bang Theory.To classify an image I used bag-of-word representation, which views an images as the histogram of image features, or visual words.Further applied k-means to cluster images features and used SVM for classification. Got accuracy of 82
2018	**Academic Paper Ranking Metric**.
	Developed a model which can be used to evaluate a researcher and research papers. The model works on over 3 million records of academic papers. It uses features like the domain, citation count,and number of publications of an author to rank the author and his/her research papers. Further, the tool can predict which newly published papers will be popular later.
2018	**Chromosome Similarity Metrics Comparison**.
	The objective of the project is to present a comparison between different metrics that determine similarity between normal and cancer cells. Results of an already existing metric,Variation of Information(VI) were compared with other metrics implemented like Jaccard, Dice, Overlap and Centroid distance.