

Swapnil Singh

swapnilsingh@vt.edu | +14705992195 | GitHub: @The-Swapster | LinkedIn: @swapnilsingh25 | Blacksburg, VA, USA | www.swapnilsingh.net

EDUCATION

Virginia Tech, Blacksburg, VA, USA May 2025*
MS in Computer Science, CGPA: 4.00/4

Mukesh Patel School of Technology Management and Engineering, NMIMS University, Mumbai, India Jul 2023
B Tech in Computer Engineering + MBA in Technology Management, CGPA: 3.82/4

TECHNICAL SKILLS

Programming: Python, R, MATLAB, SAS On Demand, SQL, SQLite, MongoDB, Unix/Linux, C, C++, Java

Data Analytics: Excel, PowerBI, Tableau, Python (Matplotlib, Seaborn, Pandas, NumPy, SciPy)

AI: Machine Learning (Scikit-Learn), Deep Learning (Keras, TensorFlow, PyTorch), Natural Language Processing (NLTK), Image Processing (OpenCV)

Technologies/Framework: Git, Big Data, Hadoop, Hive, Pig, Sqoop, HBase, Spark, SPSS, API Development, Microsoft Office

Additional Skills: Agile Methodology, Waterfall Methodology, Scrum Methodology, Cloud Platforms, Version Control

WORK EXPERIENCE

DigitAI Medicine Analytic (DAMA) Lab, Wake Forest University Oct 2023 - Current
Research Assistant Winston-Salem, NC

- Spearheaded the application of PyTorch to enhance Alzheimer's Disease subtyping through Generative Adversarial Networks (GANs), achieving a 30% reduction in misclassification rates, significantly advancing research in the field.
- Collaborating on Neuro-aging research by leveraging GANs, Convolutional Neural Networks (CNN), and Autoencoders using PyTorch attaining an RMSE of 3 years.

SBI Funds Management Limited May 2022 – Sep 2022
Data Analyst Intern Mumbai, India

- Retrieved over 50 million data records from 3 databases through SQL Queries, used Python (Pandas, Regex, and NumPy) for cleaning the data, and created reports and dashboards using Power BI and Excel contributing to 70% decision efficiency and 40% increase in digital business via 50 targeted marketing campaigns.
- Engineered a sophisticated recommendation system to enhance upselling and cross-selling strategies across a 12-million investor base.

Center for Artificial Intelligence and Robotics, Defence Research and Development Organisation May 2021 – Jun 2021
Research Trainee Bengaluru, India

- Conducted a comprehensive evaluation of the Multi-layer Perceptron, revealing a 20% improvement in convergence rate with the addition of a hidden layer using Keras and TensorFlow.
- Achieved 100% accuracy rate for the Multi-Layer Perceptron, and integrated changes leading to 15% reduction in training time.

PROJECTS

Reinforcement Learning-based Tuning of Transformer Models for Equation Discovery Sep 2023 - Dec 2023

- Implemented Transformer-based Planning for Symbolic Regression (TPSR) method using PyTorch to achieve an R2 of 0.74.
- Enhanced symbolic regression evaluation efficiency by 40% and introduced innovations, reducing computational time by 30%.

Robust Malware Detection with Hybrid Sequential Feature Extraction Sep 2022 – Apr 2022

- Developed an algorithm to convert malware byte files into images using OpenCV, Pandas, and Numpy streaming the pipeline and reducing processing time by 20%.
- Engineered a hybrid GRU, CNN, MLP, and cost-sensitive weighted Random Forest model for malware classification and detection, achieving an accuracy of 99.52%. Improved malware detection efficiency by 25% optimizing the model architecture.

Unifying Classification and Segmentation in Wildfire Detection Systems Aug 2022 - Mar 2022

- Curated a novel dataset consisting of 5400 images using the Google Earth API and MATLAB.
- Devised and optimized a customized CNN with AlexNet for forest fire detection, achieving a high accuracy rate of 88.19%.
- Used advanced image segmentation techniques like SegNet & U-Net to delineate burnt areas with a substantial dice score of 0.69.

PUBLICATIONS

- **Singh, S.** and Parihar, M., 2023, July. An Emperical Investigation into an Economic Analysis of State Road Transport Undertakings in India. In *The Indian Economic Journal*. (under publication)
- **Singh, S.**, Vazirani, V. and Krishnan, D., 2022. Review of medical imaging with machine learning and deep learning-based approaches for COVID-19. *Smart Health Technologies for the COVID-19 Pandemic: Internet of Medical Things Perspectives*, 42, p.261. IET.
- **Singh, S.** and Vazirani, V., 2022, April. Classification vs clustering: Ways for diabetes detection. In *2022 IEEE 7th International Conference for Convergence in Technology (I2CT)* (pp. 1-8). IEEE.

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

- *Student Affairs Coordinator*, Indian Student Association (Virginia Tech): Collaborated with student bodies, and managed social media for effective outreach and engagement. **Aug 2023 – Dec 2023**
- *President* of FinDrome – The Finance Cell of NMIMS MPSTME working to increase social media presence, conducted the flagship event “The Panel Discussion” with a team of 100 student members and planned the budget. **Apr 2019 – Apr 2023**
- *Joint Secretary* of IEEE Computer Society Student Chapter NMIMS MPSTME, **Jul 2022 – Apr 2023**
- *Peer Reviewer* for international conferences (IBSSC24, CIPR23, NCIT2022)