

DEVESH SINGH

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EDUCATION

Savitribai Phule Pune University

Sep 2020 – June 2024

Modern Education Society's Wadia College of Engineering

Pune, India

- Bachelor of Engineering in Computer Engineering, **CGPA: 9.16/10**
- **Relevant Coursework:** Data Structures, Algorithm Design, Object-Oriented Design, Computer Networks, Complexity Analysis, Operating Systems, Relational Databases, Compiler Design, Theory of Computation.

RESEARCH EXPERIENCE

Research Assistant ([Research Report](#)):

Mar 2023 - May 2023

Department of Computer Engineering, Savitribai Phule Pune University

- Collaborated with a team of **3 researchers** to develop machine learning models utilizing algorithms like **SVM**, **Decision Tree**, and **KNN** for crop prediction, achieving an **18%** accuracy improvement.
- Leveraged numerous Python libraries for preprocessing and visualization of **70K+** agricultural records.
- Conducted **20** cross-fold validation and tested models with the **Weka** tool. Integrated an intuitive **GUI** to provide farmers with crop recommendations based on environmental factors.

WORK EXPERIENCE

Voltup | Backend Developer Intern([Certificate](#)):

Aug 2024 - Present

- Developed a custom **CRM** using **Ruby on Rails** to manage interactions and optimize backend infrastructure for an **EV battery-swapping** platform, reducing response times by **25%** and improving uptime to **95%**.
- Integrated **ReactJS** for real-time interactions and redesigned the **PostgreSQL** database, boosting query performance by **20%** and managing **500K+** records for **10K+** daily swaps. Enhanced the **Battery Management System (BMS)** with live battery tracking and predictive maintenance, reducing downtime by **15%**.

Persistent System | SDE Intern([Certificate](#)):

June 2023 – Aug 2023

- Engineered **Natural Language Processing (NLP)** solutions using AWS services like **AWS Kendra**, enhancing search accuracy by **15%** and reducing query response times by **20%** through cloud-based optimizations.
- Collaborated with domain experts to design and deploy an efficient **cloud architecture**, boosting overall system efficiency by **25%**, while deepening understanding of **AWS cloud platforms** in enterprise-grade projects.
- Applied training in **Python**, **DBMS**, **Linux** to optimize workflows, reducing operational bottlenecks by **30%**.

IEEE Bombay Section | Full Stack Developer Intern([Certificate](#)):

Dec 2022 – Feb 2023

- Scraped dynamic websites like **Kayak** to retrieve the cheapest flight options using **Beautiful Soup**, generating a location-to-nearest **airport mapping** for **25K+** destinations via **OSRM API** and storing **85K+** data points.
- Deployed **OSRM** locally using **Docker Images**, achieving **10x** faster response times for **50K+** API calls/day, reducing the query time to **milliseconds** and boosting the overall performance by **40%**.
- Generated activity ranking scores utilizing a pre-trained **BERT model**, improving ranking accuracy by **30%**. Implemented **SCRUM** to ensure timely project delivery, enhancing team productivity by **20%**.

PROJECTS

Autism Spectrum Disorder Detection using fMRI ([Github](#)):

- Developed a **13-layer CNN** model with TensorFlow and Keras and achieved **92.5%** accuracy and **82.61%** F1 score in classifying **6000+** fMRI images from the **ABIDE** dataset for Autism Spectrum Disorder detection.
- Built and deployed a **ReactJS** web app with **NLP** integration, reducing response times by **20%** and streamlining user interaction and prediction generation. Optimized fMRI **data handling**, boosting model efficiency by **10%**, and enabled real-time **fMRI image uploads** and autism predictions via a user-friendly interface.

SafeDrive.AI - Real Time Driver Behavior Monitoring System([Github](#)):

- Engineered a robust real-time **monitoring system** using **MobileNet** and **computer vision**, achieving **95%** accuracy in **eye status** detection and **90%** in **yawning** detection.

- Developed an alert mechanism via **Pushbullet API** with a **100%** success rate for emergency notifications during airbag deployment. Optimized video workflows with **OpenCV** and **Dlib**, enhancing facial recognition efficiency by **30%** in **low-light** conditions and ensuring seamless operation on resource-constrained devices.

Arrhythmia Classification Using ECG Signals([Github](#)):

- Developed an automated **ECG arrhythmia** detection system using a custom **8-layer CNN**, achieving **92.39%** accuracy across **17** arrhythmia types with **10-fold** cross-validation.
- Optimized preprocessing pipelines to convert **QRS complexes** into **2D image** inputs and applied augmentation techniques, boosting generalization by **20%**, and used **confusion matrices** for detailed performance insights.
- Addressed class imbalance with **proportionate sampling**, improving sensitivity by **25%**.

Smart Helmet Violation and License Plate Detection System ([Github](#)):

- Engineered a **YOLOv8** based model in Python to detect helmet violations among motorcyclists with **95.5%** accuracy and **GUI** using **JavaBeans** for secure **authentication** and video input of **live camera** feeds.
- Integrated **OCR** to extract vehicle registration numbers, boosting violation detection rates by **60%**. Optimized **low-light** detection accuracy by **35%** through rigorous model training and testing.

TECHNICAL SKILLS

Programming Languages	C/C++, Python, Javascript, SQL
Development	React.js, Node.js, Express.js, MySQL, Mongo DB, Redis, AWS
Tools & Libraries	Git, Rest APIs, Pandas, NumPy, Matplotlib, Pytorch, OpenCV, Tensorflow, Keras

PUBLICATIONS

- Bodhke, B.K., **Singh, D.S.**, Shaikh, U.H., Phadtare, S.V., & Aslaan, M. *Autism Spectrum Disorder Detection Using Machine Learning*. Proceedings of the International Organization of Scientific Research Journal of Computer Engineering (IOSR-JCE), Vol. 26(5), Ser. 2, pp. 41-47, 2024. ([Research Paper](#))
- Khan, R., Shaikh, U.H., **Singh, D.S.**, Phadtare, S.V., & Aslaan, M. *A Review of Autism Spectrum Disorder Detection Using Machine Learning*. Proceedings of the International Organization of Scientific Research Journal of Computer Engineering (IOSR-JCE), Vol. 26(5), Ser. 2, pp. 32-40, 2024. ([Research Paper](#))

EXTRACURRICULAR ACTIVITIES

Technical Core Lead | Google Developer Student Clubs ([Certificate](#)):

May 2022 - May 2024

- Provided **technical guidance** and **mentorship** to students, introducing them to Google's latest technologies and upcoming products, fostering **awareness** and engagement with cutting-edge **innovations**.
- Led a team of **10** colleagues in conducting a **hackathon** that attracted over **100** participants and resulted in **25+** innovative projects while collaborating with **cross-functional** teams to enhance efficiency and execution.

CERTIFICATIONS

- **Convolutional Neural Networks**, DeepLearning.AI, *Oct 2024*
- **Web Development Bootcamp**, Udemy, *Oct 2024*
- **Neural Networks and Deep Learning**, DeepLearning.AI, *Sep 2024*
- **Machine Learning for All**, University of London, *Sep 2024*
- **C, C++, Advanced C++, Python, GIT**, Spoken Tutorial, *May 2022 & Dec 2023*
- **Google Cloud Program**, Google, *Oct 2021*
- **Object-Oriented Data Structures in C++**, University of Illinois Urbana-Champaign, *Sep 2021*
- **Python Programming: From Basics to Advanced Level**, Udemy, *Jul 2021*

ACHIEVEMENTS

- Accomplished a **4*** rating in **DSA** and a **5*** rating in **C++** on HackerRank.
- Consistently ranked in the **top 5%** of the CSE Department.
- Excelled in the **HackerEarth** and the **Codathon Hackathon** hosted by **MANIT Bhopal** in 2022.
- Advanced to the **Pre-elimination** round of **Codechef SnackDown** 2021.
- Collaborated on **6 pull/merge** requests and excelled as an **Open Source Contributor** during **Hacktoberfest**.