HARSH AGRAWAL

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EDUCATION

Northeastern University, Boston, MA **GPA: 3.5/4.0**
M.S. Computer Science *Expected: May 2024*
- **Relevant Courses:** Programming Design Paradigm, DBMS, Algorithms, Pattern Recognition and Computer Vision

Narsee Monjee Institute of Management Studies, Mumbai, India **GPA: 3.75/4.0**
B.Tech. (Hons.) Computer Engineering *July 2018 – May 2022*
- **Relevant Courses:** Artificial Intelligence, Image processing, Soft Computing, Natural Language Processing

PROFESSIONAL EXPERIENCE

Pheme Software Pvt. Ltd **Remote**
Python Developer Intern *May 2021 – June 2021*
- Conceptualized, designed, and developed an **AI-based online examination system** with **anti-cheating features** that **reduced cheating incidents by 20%;** integrated system with LMS platforms and **increased user engagement by 40%**
- Implemented **facial recognition system using PyTesseract** to monitor student behavior during exams, resulting in a **95% accuracy rate** and improving exam security by detecting potential cheating attempts

PROJECTS & RESEARCH EXPERIENCE

Hazard View Bird (Disaster Scene Parsing) *January 2023 – May 2023*
- Developed an **on-device Disaster Scene Parsing and Detection system**, utilizing **transfer learning** to build a segmentation and classification model that can accurately identify 14 different types of disaster damage
- Implemented **pruning and quantization** techniques to optimize the model and then **converted it to ONNX format** for deployment on **low computing processors** like **NVIDIA Jetson**, resulting in a **40% reduction in processing time**
- Won the **3rd prize** at the **2nd Khoury Annual Project Pitch-A-thon**, for presenting research and the project's potential impact on disaster relief efforts

Portfolio Management and Analysis System *September 2022 – December 2022*
- Designed and executed a user-friendly **stock portfolio management system** using **Java and MVC architecture**, following **Agile methodology,** facilitating the buying, and selling of shares on specific dates
- Incorporated advanced features such as **dollar-cost averaging, rebalancing flexible portfolios, and determining portfolio value over time** to enhance user experience
- Maintained system integrity by rigorously testing functionalities using **JUnit testing** methodologies, employing various **design patterns** that resulted in a **72% reduction** in code refactoring during new feature development

Personalized GIF-based Reply Recommendation System *November 2021 – May 2022*
- Formulated an approach for **predicting relevant GIFs** to be used as replies in text messages, resulting in a **45% increase** in prediction accuracy using the **VINVL transformer** model compared to **OSCAR transformer**
- Implemented **Python scripts** to collect over **1.5M tweets** from Twitter and fed it to a **multimodal encoder-based pipeline** that utilized over **115K GIFs**, resulting in an accuracy rate of over **80%**
- Engineered and built a **custom dataset-based collaborative filtering recommendation system** that uses **sentiment analysis** and user characteristics to deliver personalized replies, **reducing response time by up to 50%**

Heart Failure Prediction with EDA *January 2021 – May 2021*
- Developed a **novel Ensemble-based** approach **integrating various machine learning classifiers** including **AdaBoost, CatBoost, and XG Boost** to predict the likelihood of **heart failure**, achieving an **accuracy of 85.2% and a recall of 87.5%**.
- Performed **extensive exploratory data analysis** on a dataset of **4,238 records** from the Framingham Heart Study, evaluating and identifying the impact of attributes such as **age, blood pressure levels, and cholesterol levels on heart disease risk**.
- **Published a research paper** on IEEE Xplore - DOI: 10.1109/CONIT51480.2021.9498561

Pneumonia Detection Using Transfer Learning *January 2021 – April 2021*
- Proposed a **pneumonia classification system** using **transfer learning and image augmentation techniques** with **OpenCV, Tensorflow, and Keras in Python**, resulting in a **97.4% recall** on test data
- Introduced a **novel image preprocessing pipeline** that included **histogram equalization, erosion, and dilation** to enhance the accuracy of the classification system **for seven types of pneumonia X-ray images**
- **Published a research paper** on IEEE Xplore - DOI: 10.1109/ICAIS50930.2021.9395895

SKILLS

Languages: Python, Java, C, C++, SQL, R, JavaScript, HTML, CSS
Frameworks: TensorFlow, PyTorch, Scikit Learn, Keras, NumPy, Pandas, OpenCV, Junit testing
Tools/IDE: Linux, Git, AWS, Tableau, MATLAB, MySQL, Firebase, Android Studio
Technologies: CUDA, AI, Machine Learning, Deep Learning, Computer Vision, Cloud Computing, Android App Development
Certifications: Computer Vision Nanodegree, Intro to ML using TensorFlow Nanodegree, Deep Learning Specialization
Accomplishments: Kaggle Notebooks Expert, Best Rank - 711/267,000+ developers