Uday Sonawane

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Education

Northeastern University, Khoury College of Computer Sciences **September 2024 - Present**
Master of Science in Computer Science *Boston, MA*
Related Courses: *Programming Design Paradigm, Database Management Systems*

Vellore Institute of Technology, Vellore **August 2019 - June 2023**
Bachelor of Technology in Computer Science (CGPA of 8.55) *Tamil Nadu, India*
Related Courses: *Artificial Intelligence, Software Engineering, Data Structures and Algorithms*

Experience

Siemens Digital Industries Software **June 2023 – January 2024**
Software Engineer Intern *Pune, India*

- Participated in an **Agile Release Train (ART)** environment, engaging in **scrums** and **collaborating** with various teams to effectively address root causes of bugs and errors.
- **Debugged** and resolved over **70%** of errors in ReactJS and C++, enhancing code efficiency through **targeted optimizations**. My **adaptability** allowed me to quickly acclimate to the work environment and efficiently complete tasks.
- Developed **Automation Tests** to increase code coverage and validate the functionality of the software product, significantly improving code quality.
- Created a Python program utilizing **Regex** to extract errors from log files, organizing and categorizing them in an Excel sheet for easier analysis and improved **troubleshooting**.

Tata Autocomp **May 2022 – June 2022**
Data Science Intern *Pune, India*

- Conducted extensive **Data Analytics** using Python libraries such as **NumPy**, **Seaborn**, and **Scikit-Learn** to estimate battery life cycle expectancy base on driving behaviour. This analysis was performed in Jupyter Notebook, employing regression models like **Support Vector Regression (SVR)** and **Lasso Regression**, as well as ensemble models such as **Gradient Boosting**.
- Developed a Machine Learning based anomaly detection model using **Isolation Forest Classifier** and **K-Means clustering** to identify faulty sensors, significantly enhancing data reliability and operational efficiency.
- Presented analytical findings and model results, translating complex data insights into actionable recommendations to **optimize performance** and **reliability**.

Projects

Comparative Analysis of Machine Learning Approaches for Stock Forecasting | *Python, TensorFlow* | May 2024

- Conducted a comprehensive analysis of four predictive modeling approaches: **Deep Learning Model** (RNN using LSTM), **regression** models, **ARIMA** model, and **ensemble** models (including Gradient Boosting).
- Evaluated model performance based on key indicators: investment horizon (long-term vs. short-term), **predictive accuracy**, and data requirements.
- Assessed effectiveness in accurately predicting values and analyzed the data needs for optimal performance.Identified the **best-performing model** for real-world investment scenarios, enhancing both technical skills and practical application knowledge.

Securing Images from Cryptotext using DWT and Hilbert Curve | *Python* | April 2023

- Developed a secure method for image communication, preventing unauthorized access through appropriate key and algorithm implementation.
- Utilized **creative ideation** to employ the **Hilbert curve** for **encoding images** and the **Discrete Wavelet Transform** to eliminate **steganography**, thereby enhancing security.
- Transformed images into text format using the Hilbert curve, ensuring data remains unintelligible to attackers even if intercepted.
- Designed a decoding process requiring both the dimensions of the original image and the key used for encoding.

GMail Spam Filter using AI | *Python, Google Cloud, Scikit-Learn* | August 2022

- Developed a **spam filter** utilizing the **Gaussian Naive Bayes** machine learning algorithm, achieving a **97%** accuracy rate across multiple datasets.
- Successfully integrated the spam filter with Gmail using the **Google Cloud API**, enabling remote operation.
- Implemented a system to **categorize emails** based on content types, including spam with file attachments, spam with URLs, plain spam, and non-malicious emails.
- Designed customizable blacklist and whitelist features,allowing users to bypass the spam filter or consistently mark emails as spam. Enhanced **email management** and security through advanced filtering and user control.

Online Book Borrowing System | *HTML, CSS, JavaScript, PHP* | December 2021

- Developed a web-based system using **PHP** to facilitate book exchanges among students, featuring a user-friendly frontend designed with **HTML, CSS and JavaScript**.
- Implemented functionalities including a graph to visualize book request trends, and options for users to buy, rent, or request specific books.
- Managed data storage with a **MySQL** database hosted on **XAMPP**, ensuring efficient data handling through careful planning and normalization for optimized performance.

Achievements

- Highest rating of **1439** at Codeforces, ranked **1441** at Round 941 Div. 2, and ranked **502** at Round 944 Div. 4, which is the top site in terms of participation of programmers across globe.
- Ranked **734** at Codechef Starters 132 Div. 2 which ranks among the top sites for competitive programmers. Highest rating of 1646 and rated **3***.
- Solved over **700+ problems** across various platforms, showcasing my **Programming** skills and **Problem Solving** abilities.

Certificates

Google Data Analytics Specialization, **UC San Diego**: Algorithmic Toolbox, **Hackerrank**: Problem Solving Intermediate

Core Skills

Languages: C++, Python, HTML, CSS, JavaScript, SQL, R, Java, PHP, C
Technologies:Jupyter, Numpy, Scikit-Learn, Tensorflow, Deep Learning, Machine Learning, Pytorch, Algorithms, Software Development, Test Automation, Data Analysis, Debugging, Computer Vision
Skills: Communication, Creative Ideation, Troubleshooting, Collaboration, Analytics, Problem Solving, Critical Thinking, Adaptability