NITIN JOTWANI

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EDUCATION

University of Michigan 08/2023 – 04/2025 | Ann Arbor, United States
MS, Computer Science and Statistics
Courses: Machine Learning • Computer Vision • Matrix Methods for Machine Learning • Self Driving Cars: Perception and Control • Deep Learning for Robot Perception • Foundations of Large Language Models
On Full Tuition Waiver Scholarship
GPA: 4.0/4.0

Manipal Institute of Technology 2017 – 2021 | Manipal, India
Bachelors, Computer Science and Computational Mathematics
GPA 3.7/4.0

EXPERIENCE

AMERICAN EXPRESS 09/2022 – 07/2023
Data Scientist
- **Contributed** in the **end-to-end deployment** of **XGBoost**, a **classification ML model**, to implement strategy-based suppression controls on product offers. This involved rigorously tuning the model to align with the specific needs of U.S. small business card services, ensuring **optimal balance** between offer attractiveness and profitability.
- Significantly **enhanced model accuracy** by meticulously **feature engineering**, leading to a **12% reduction in false positive rates**. This process involved deep analysis and transformation of complex datasets, ensuring that the model accurately identifies patterns and trends relevant to offer churn in basic card acquisition.
- Demonstrated expertise in **data analysis** by effectively utilizing **SQL** to process and analyze large datasets. This involved writing **complex queries**, optimizing **data retrieval**, and ensuring **data integrity**, which were crucial for the accurate training and functioning of the machine learning models.

CITIBANK 09/2021 – 09/2022
Data Scientist
- Built **clustering algorithms**, including **Birch** and **GMM**, with **sentence-level BERT embeddings** for text clustering and topic modeling.
- Gained insights into pain points from a dataset comprising 3.5 million emails and 95,000 survey comments from 750,000 corporate clients.
- Engineered a comprehensive **data pre-processing** pipeline encompassing **named-entity recognition**, **parts-of-speech tagging**, **lemmatization**, and **regex operations**.
- **Devised** an **algorithm** using **Fuzzy-Wuzzy** and **Semantic Matcher** libraries to effectively eliminate disclaimers from emails, achieving successful disclaimer removal on a self-curated dataset, covering 93% of the email data.
- **Awarded an honor** for **outstanding contributions** to **NLP research** and the development of models with superior performance in comparison to existing solutions. The project was chosen to be presented at the **NASSCOM Conference in India**.

PHILIPS HEALTHCARE 02/2021 – 08/2021
Software Engineering Intern
- Successfully **migrated code** of UI functions from **Java Swing** API to **JavaFX** API, enhancing **code efficiency** and **traceability**.
- Maintained a code coverage of approximately 99% through extensive testing with **JUnit 5** and the **Mockito** framework.
- Worked closely with UI/UX teams to coordinate and integrate the **Design Language Specification (DLS)** into the project.
- Actively participated in **Agile development** processes, including sprints and scrum meetings, and utilized **Azure DevOps** for project management.
- Demonstrated expertise in software architecture and coding by implementing the **Model-View-Controller (MVC)** architecture, adhering to **SOLID principles**, and applying **design patterns**. This approach led to a reduction in **code maintenance** efforts and improved code maintainability.

TATA CONSULTANCY SERVICES, RESEARCH CENTER 06/2020 – 08/2020
Computer Vision Intern
- Developed a **hand gesture and motion recognition** system in **OpenCV** for car stereo systems, facilitating precise control over volume, channel selection, and phone-call operations.
- Leveraged **image processing techniques** like background subtraction and contour detection for a **12% improvement in accuracy**.
- Implemented optimized **frame skipping**, **buffering techniques**, and **image resolution reduction** to reduce the average frame processing time down to 25 milliseconds, significantly improving **system responsiveness**.
- Applied concepts from academic papers for **identifying facial landmarks** and calculating the eye aspect ratio (EAR) for **blink rate analysis**, contributing to the advancement of driver safety features.

PROJECTS

Scene Animation using (RGB) Images and Depth Maps
- **Developed** an innovative **Scene Animation** using (RGB) Images and Depth maps, incorporating a **fusion algorithm** (EnGD) to merge real-world RGB images with **depth maps** and customized **gradient maps**.
- Leveraged **StyleGAN2** in a three-step process, achieving stylized and realistic effects on animated images.
- Demonstrated success through sequential steps on real-world images and training on a pseudo-paired Shinkai-style anime dataset.

Neural Nets in High-Performance Computing (HPC) Applications
Hewlett Packard Enterprise
- **Verified** the findings in the **publication** titled "A Preliminary Study of **Neural Network-based Approximation** for HPC Applications."
- Created a **seq2seq** model with 2 recurrent layers employing **LSTMs** to compute polynomial equation roots.
- Achieved an **absolute error within a 0.2 limit**, surpassing the prescribed CNN model's accuracy, and realized a **2.7x speedup.**

SKILLS

Languages (Python, SQL), **Frameworks** (PyTorch, TensorFlow, Scikit-learn, Spark, Hadoop),
Libraries (Numpy, Pandas, Keras, Matplotlib, MySQL, PostgreSQL),
Tools (Git, Bash, Jira, Azure DevOps, Postman, IntelliJ, Webpack, NPM, Node, Linux/MacOS)