Abhishek Tiwari

+91 7404971325   - abhishektnuse@gmail.com   -   linkedin.com/in/abhishek-tiwari-iitm   -   github.com/tabhishek432

EDUCATION

Indian Institute of Technology, Madras   **Chennai, India**
B.Tech in Engineering Physics   *Jul 2019 - May 2023*

TECHNICAL SKILLS

Programming Languages: Java, C, C++, Javascript, Python
Libraries, Frameworks and Tools: Spring, Springboot, Maven, Qt, React, Node, Redux Toolkit, Preact, OJET, jQuery, Ajax, Typescript, PyTorch, Tensorflow, Kubernetes, Docker, Git, Terraform, Grafana, SQL, NoSQL, MySQL, OpenGL, AWS, OCI

WORK EXPERIENCE

Oracle India Pvt. Ltd.   **Bengaluru, India**
Member of Technical Staff (Software Developer)   *Jun 2023 - Present*

- Developed a comprehensive **Data Transformation** tool for Oracle's **Unity CDP** from the ground up, integrating Oracle's **GenAI** capabilities on SQL databases to empower users in building data pipelines with increased speed and efficiency.
- Accelerated microservice performance by resolving critical database and CI/CD pipeline bottlenecks, conducting rigorous end-to-end testing. Contributed to a **16% reduction** in cost by migrating from **AWS Legacy Cluster** to **OCI Unified Cluster**.
- Provided over **125+ hours** of on-call support, promptly resolving critical issues and ensuring **99%** system uptime. Debugged and resolved numerous client issues encompassing DevOps, frontend and backend issues, enhancing system stability and UX.

The GNU Project, Google Summer of Code   **Remote**
Open Source Developer   *May 2023 - Jul 2023*

- Engineered a **responsive web user interface** for XaoS using **Qt and QTimer**, addressing a significant challenge faced by the open-source community in enabling **real-time fractal interaction** in web browsers. This remarkable feat eliminates the need for software installation, making it accessible for **use in schools and educational settings** directly through web browsers.
- Successfully migrated the XaoS codebase to **Qt 6** and ensured full functionality of its WebAssembly version, enhancing cross-platform compatibility and performance. This migration unlocks the potential for **cloud-based deployment** of XaoS.
- Fixed critical issues related to **loading random examples**, improving user experience and reliability of the XaoS application.

Worldquant   **Remote**
BRAIN Research Consultant   *Feb 2023 - Jun 2023*

- Developed and implemented **innovative alpha strategies** leveraging cutting-edge research. This resulted in a quantifiable improvement in **Sharpe ratios by 40%.** and **fitness by 20%** on average, which translated to an increase in **PnL by 80%**.
- Collaborated with the research team to conduct thorough back-testing of alpha models on historical data spanning 6 years. Through this process, we identified key trends and patterns that ultimately increased **model accuracy** remarkably by **20%**.
- Engineered and optimized high-performance **Super Alphas** through the design of selective and combination expressions in **Python** and using **BRAIN APIs**, achieving maximum returns and ensuring robust and consistent portfolio performance.

Oracle India Pvt. Ltd.   **Hyderabad, India**
Software Developer Intern   *May 2022 - Jul 2022*

- Developed WebUI tool using **Python-CGI** and **jQuery** for PSR (Performance, Scalability and Reliability) Automated Gatling test to test microservices which resulted in **reducing 10-15%** of manual efforts as compared to running gatling tests on CLI.
- Tested performance and resource consumption for the different ML models generated by **AutoML** UI on **OML SQL database**.

ARTPark, IISc   **Bangalore, India**
NLP Intern   *March 2022 - May 2022*

- Developed a sophisticated **NLP** chatbot capable of answering complex queries over a massive corpus by leveraging cutting-edge techniques and **Seq2Seq** models for text retrieval, document retrieval, and question answering.
- Used Haystack for web scraping data, **FAISS** (Facebook AI Similarity Search) for document and paragraph retrieval & **LFQA** (Long Form Question Answering) **Bert** Model to develop chatbot for questions.

PROJECTS & PUBLICATIONS

1. Chandra, R., **Tiwari, A.**, Jain, N., & Badhe, S. (2024, 01). **Large language models for metaphor detection: Bhagavad gita and sermon on the mount**. *IEEE Access*, PP, 1-1. doi: 10.1109/ACCESS.2024.3411060   **IEEE Access**

2. **Detection of Lymph Node Metastases in Women with Breast Cancer**

- Developed and experimented with **Vision Transformer-based** deep learning algorithms to accurately segment tumorous cells in image patches, and ensembled the outputs for enhanced performance. Extracted features at a downsample level of 64 from the generated masks of tumor cells at a downsample level of 1, obtaining regional properties of connected components.
- Constructed a comprehensive feature vector using **morphological and geometric** features, and utilized machine learning models to determine the **pN staging of tumors**, significantly advancing the accuracy and reliability of the staging process.
- The results of the experiment led to remarkable **optimizations** and helped in inferring best **SOTA** model specifically for this.

3. **Scene Graph Referring Relations**
- Worked with Prof. Soma Biswas, IISc and Subarna Tripathi, Intel on evaluating the performance of a simple GCN on scene graphs and comparing them with RoBERTa model to figure out if they give similar accuracy.
- Evaluated Referring Relations accuracy of Visual Genome dataset on MDETR before and after fine tuning the MDETR model on Visual Genome dataset.

4. **New MS-Lesions Segmentation on MRI dataset for two time points, MSSEG-II**
- Worked with Prof. Ganapthy Krishnamurthy, IIT Madras on MICCAI MSSEG-II challenge.
- Pre-processed the MRI dataset using Image registration and normalization.
- Adopted a voxel-based approach to train the model, overcoming the practical challenge of different data input sizes collected from different laboratories.

SCHOLASTIC ACHIEVEMENTS

- Achieved **AIR 626** out of **12,00,000+** candidates who appeared for **Joint Entrance Examination 2019** conducted by NTA
- Achieved **AIR 476** out of **1,00,000+** candidates who appeared for **KVPY** Examination 2018 and received **KVPY Fellowship**
- Achieved **AIR 100** out of **80,000+** candidates who appeared for **NEST** Exam 2019 conducted by NISER, Govt of India
- Among the **National Top 1%** of India and **top 5 in State** in **NSEJS** 2017 (1st round of selection for IJSO and IOAA in India)