AMEYA SHIRISH BHAVE

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❖ EDUCATION:

M.S in Computer Science,   2022-Present
University of Maryland, Baltimore County   GPA : 3.63/4

BE in Computer Engineering,   2014-2018
University of Mumbai   CGPA:7.75/10

❖ SKILLS:

Languages: Python, HTML, CSS, Javascript, SQL, C
FrontEnd- React, Redux Toolkit, Tailwind CSS.
BackEnd- Node.js, Express.js, MongoDB
Machine Learning Frameworks : Pytorch
Technologies : Docker, Kubernetes, Git, Azure AI studio.

❖ PROFESSIONAL EXPERIENCE:

Accenture, Mumbai

Application Development Analyst   **Oct 2018– Nov 2021**

- Conceptualized, designed, and executed three innovative processes aimed at efficiently handling incoming requests, seamlessly integrating them into the workflow. Utilized essential tools including Oracle Utilities Application Framework, SQL Developer, Eclipse IDE for Java, and ClearCase to exceed client requirements.
- Conducted comprehensive analysis and meticulously authored three technical documents, playing a pivotal role in translating functional requirements into precise technical modules within the Oracle Framework.
- Led an initiative involving in-depth analysis, development, and refinement of over 20 modules from previous deliverables, resulting in an impressive 90% enhancement in system performance for these functions, while adeptly accommodating new requirements.
- Contributed to 10 production release GoLives, providing vital support to the production environment in resolving ad-hoc issues related to critical business processes, leveraging AppDynamics.
- Successfully rectified over 50 defects discovered during module testing, ensuring smooth transitions of deliverables into production utilizing the HP Application Lifecycle Management tool. Effectively addressed and provided solutions for more than 100 functional incidents raised by the business.
- Delivered three modules as part of a Continuous Integration/Continuous Delivery framework.

❖ RELEVANT PROJECTS:

Real Estate App using the MERN Stack [https://mern-estate-project-nz9d.onrender.com]   **Mar 2024 -Apr 2024**

- Implemented secure user authentication using email, password, and OAuth with JWT for enhanced security. Enabled comprehensive CRUD operations. Designed and managed user profile features, including profile image uploads and secure account deletion through JWT cookie validation for property listings, allowing users to create, update, and delete properties. Developed an advanced search feature with multiple filters and sorting options for efficient property search. Crafted an intuitive user interface with image sliders and streamlined listing management for property owners. Deployed the application on the 'render' platform, making it suitable for portfolio showcase or public use.
- Technologies used were React, Redux Toolkit, React Router Dom, Tailwind CSS for Frontend. Node.js, Express.js, MongoDB for Backend. JWT, Google OAuth for Authentication. Firebase Storage for image handling for Storage and Render platform for Deployment.

Evaluation of LLM on STS Datasets   **Oct 2023 - Dec 2023**
- Analyzed the performance of various LLMs like BERT, GPT-2, XLNet, and ROBERTA on STS dataset using **Spearman's Correlation.**
- Customized LLMs by adding new layers to understand domain-specific data, increasing performance.

Solving System of Linear Equations using Quantum Algorithm and finding potential speed-ups   **Oct 2023 - Dec 2023**
- Worked on simulations of the HHL algorithm on Qiskit with exploring the possibilities of improving the time of performing the HHL algorithm. Created a new emulator tool for solving the system of linear equations which showcased constant time implementation of the algorithm on a classical computer as compared to its simulator counterpart which had an exponential time speed up.
- Successfully showcased the difference in time per shot of the emulator vs simulator and also achieved 10^{-3} absolute error between the true solution and the solution from the emulator.

Quantum Accelerated Simulated Annealing (Paper accepted at the IET QET 2023 conference)   **Jan 2023 - July 2023**
- Introduced the concept of discretized quantum annealing (DiQA) as an alternative to hardware-based physical quantum annealers to target Combinatorial Optimization problems. Benchmarked DiQA against simulated annealing and proposed a hybrid quantum-classical heuristic called Quantum Accelerated Simulated Annealing (QASA).
- Showed that QASA performs comparably to simulated annealing but with a reduced number of steps. Demonstrated the potential of using low-depth DiQA circuits to speed up the classical annealing procedure
- The implementation was done using the Qiskit library and IBM Quantum Backend.

Formulating a Recurrent Neural Network (RNN) to simulate Random Quantum Circuits   **Mar 2023 - May 2023**
- An RNN model to implement supervised learning for approximating the expectation values of quantum circuits that are still not feasible to run on existing quantum computers and simulators
- A sequence to sequence architecture where the RNN is trained on a Backpropagation through time (BPTT) model. We added Long Short-Term Memory (LSTM) layers in our model, and configured it using ReLU as our activation function. We then compiled the model with Binary Cross Entropy (BCE) as our loss function, Adam as our optimizer and R^2 as our evaluation metrics. Implementation involves use of numpy, tensorflow, keras, sklearn,matplotlib.
- The model gave R^2 value -0.0368 which showcased that the model did not perform well enough.

Literature Review on Quantum Natural Language Processing   **Sept 2023 - Dec 2023**
- Worked on a literature review paper to explain the intersection of NLP and Quantum Computing with the latest frameworks and implementations. Paper included a context on different Machine Learning models for NLP tasks and Quantum NLP along with the introduction and design of the DisCoCat framework along with its applications on different NLP tasks.
- Gathered the necessary review papers, performed analysis on the implementations described in these papers.

❖ **ACADEMIC EXPERIENCE:**
CSEE dept, UMBC
Graduate Assistant, Grader for CMSC-203 (Discrete Structures)   **Aug 2023–Present**
- Graded assignments for accuracy and completeness. Provided constructive feedback to students on their assignments. Helped students via email communication or in-person to address their inquiries. Collaborating with the instructor to maintain consistency in grading standards.
- Enhancing proficiency in discrete mathematics concepts and problem-solving. Improved communication and interpersonal skills through interactions with students. Developed time management and organizational skills while juggling grading duties.

Office of Academic and Pre-Professional Studies, UMBC

Orientation advisor   **Winter 2022 - Summer 2023**
- Helped incoming undergrad students in choosing their classes and planning their schedules for the Freshman year. Advised on the courses selection for the particular track of interest within Computer Science for a major.

❖ **TECHNICAL CERTIFICATIONS:**
- IBM Certified Associate Developer - Quantum Computation using Qiskit v0.2X , Nov 2021
- Amazon Web Services Certified Developer Associate 2020**.**

❖ **PUBLICATIONS:**

[1] A. Bhave and A. Borle, "On quantum annealing without a physical quantum annealer," Quantum Engineering and Technology Conference (QET 2023), London, UK, 2023, pp. 19-26, doi: 10.1049/icp.2023.3265.

[2] Y. Galphat, M. Gangwani, A. Bhave, B.S. Chadha, S. Adnani, "Integrating BCI with Virtual Reality", International Journal of Computer Sciences and Engineering, Vol.6, Issue.1, pp.129-131, 2018.