ATHARVA BARWE

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WORK AUTHORIZATION : F1-OPT/EAD starting 06/26/2023 and extendable until 06/25/2026

EDUCATION

Master of Science in Computer Science (MS) August 2021-May 2023

Ira A. Fulton Schools of Engineering, Arizona State University

Relevant Coursework - Distributed Database Systems, Artificial Intelligence, and Statistical Machine Learning

Bachelor of Engineering in Computer Engineering (BE) August 2017-May 2021

Thadomal Shahani Engineering College, University of Mumbai CGPA: 8.61/10

Relevant Coursework - Machine Learning, Database Management Systems, Advanced Algorithms, and Software Engineering

TECHNICAL SKILLS

- **Programming Languages**: Python, R, SQL, C, C#, Java, HTML, CSS, Javascript, and PHP
- **Tools and Softwares**: AWS S3, Node.js, D3.js, REST, PostgreSQL, Tableau, PowerBI, Google Colab, Django, Flask, Jupyter Notebook, R Studio, Microsoft Excel, Microsoft SQL Server, Kanban, and Oracle Database
- **Libraries**: React, Scikit-learn, PyTorch, TensorFlow, Keras, Matplotlib, Pandas, Scipy, and Numpy
- **Certifications**: Deep Learning specialization from deeplearning.ai, Machine Learning certification from NPTEL, Python Programming certification from Microsoft

PROFESSIONAL EXPERIENCE

Technical Intern - *Cloud Counselage* March 2020-July 2020

- Devised an Event Recommendation System that works based on employees' interests, scoring in the top 10% of interns
- Built a deep neural network that matches an event with an employee with an accuracy of 88% by extracting keywords from the event title and description
- Maintained the Project Charter, Development Log, Software Requirements and Specifications, RAID log, Design Document and Project Plan throughout the Software Development Life Cycle

Trainee - *Air India Ltd.* June 2019-July 2019

- Monitored the operation of Boeing aircraft engines in the Base Maintenance Division as a member of the Avionics Team
- Collaborated with other trainees to update the Flight Management Computer System of the Boeing B787-8 with flight data
- Performed preflight maintenance checks in the interiors of the Boeing-747, Boeing-777, and Boeing-787

ACADEMIC PROJECTS

Text Analysis Web Application (Tableau, React, Python, Flask, REST, JavaScript)

- Built a web application to let users perform NLP operations like keyword extraction and text summarization on text in order to analyze it and gain insights
- Utilized RESTful API services to pass the results of these NLP operations from server to client application

Patient ICU Admittance Analysis Dashboard (Python, Tableau, Flask, REST, JavaScript, D3.js)

- Built an interactive visual dashboard to explore and analyze ICU admittance data of patients
- Performed Multidimensional Scaling to find correlation between patients' characteristics. Further categorized data with K-means clustering
- Utilized multiple D3.js charts to display patient details. Filtering, brushing and linking, and dynamic charts were incorporated to gather insights from selected data

Agricultural Produce Price Prediction using Deep Learning (Python, Tensorflow, Keras, Tableau, Pandas, Kivy)

- Developed an application estimating crop prices for farmers based on the estimated time and location of sale
- Constructed 18 experimental neural network architectures utilizing Python's TensorFlow and Keras libraries on Jupyter Notebook and trained them on 1.5 million rows of data in Excel collected over 20 years across India
- Ascertained the best model for each crop, resulting in predictions that were within 9% of the true values on average by conducting Comparative Analysis on the experimental models
- Contributed to a mobile application by employing Python's Kivy to make the prediction models accessible to a layperson

Monte-Carlo Tree Search in the Pacman Domain (Python, Tensorflow)

- Explored the performance of the Monte-Carlo Tree Search (MCTS) algorithm using Python in the Pacman domain and compared it against Reflex, Minimax, Alpha-Beta, and Expectimax agents in a wide range of Pacman game environments
- Concluded that the base MCTS agent's 16.67% win rate is severely outclassed by the aforementioned agents' win rates between 72% and 100% over a variety of Pacman mazes, with difficulties 'Easy', 'Medium', and 'Hard'
- Created an improved version of the MCTS agent with a performance faster by at least a factor of 24, by augmenting the agent with a basic neural network; with potential for future improvement

Investigating the Impact of Training Data Selection on Calibration and Selective Prediction

- Aimed to enhance the generalization potential of the BERT model on unseen data
- Implemented Selective Prediction by segregating the CommonsenseQA dataset based on the difficulty of its training examples
- Generated confidence files that provided insight into the model's Selective Prediction performance