Zeed Almelhem

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Education

B.S in Computer Science - University of Nevada, Reno GPA: 4.0, Expected Graduation: May, 2026

- Relevant Coursework: Data Structures and Algorithms, Machine Learning, Multivariable Calculus, Probability and Statistics, Principles of Database Systems, and Principles of Software Engineering.
- Self-paced online Computer Science curriculum from Open Source Society University, supplemented by courses from MIT, Harvard, and Stanford.
- Self-studied Data Science curriculum from AMAI AI Experts Roadmap, complemented by online courses from Stanford Online and Dataquest.

Work Experience

Data Science Intern – The city of Reno Jan 2025 - Present

- Collaborating with 5 departments to define strategic goals, implementation plans, and key performance indicators (KPIs) to measure success.
- Designing and developing data pipelines using Accela and ServiceNow APIs with SQL Server to centralize performance data in a data warehouse.
- Creating Microsoft Power Apps to streamline data collection from multiple departments for the performance management system.
- Designing an automated performance management system using Power BI, PowerQuery and T-SQL to track KPIs for 27 City of Reno departments.

Web App Development Lead – DRI - Desert Research Institute Sep 2024 - Present

- Developing and maintaining the MRoS web app in Bubble, resolving bugs, updating workflows, and integrating new features through shared decision-making, using tools like SQL for the database and full-stack development with HTML, CSS, and JavaScript.
- Developing a data analytics dashboard using Python, SQL, and Power BI to track user interactions, enabling data-driven improvements that increased user engagement.
- Creating a remote control plugin using JavaScript for support teams, reducing troubleshooting time and improving app maintenance efficiency.
- Managing and training a web development intern and a support tech and collaborating with a multidisciplinary team of 10+ scientists to align app functionality with research needs, ensuring seamless data processing and user experience.

Data Scientist / Software Engineer – Freelance Dec 2022 - July 2024

- Collaborated with Dr. Hampden Kuhns on researching and developing an IoT device for sleep environment management, incorporating air quality, temperature, sound levels, and light measurements, focusing on the project's hardware and software sides.
- Created and published 10 passion projects covering topics such as Global Economics, Education, and demographic analyses of U.S. states and counties—developed machine learning models to solve practical problems in these areas.
- Developed a full-stack solution for a client, including a cross-platform mobile app and an admin dashboard. Led the entire development lifecycle from planning and designing software architecture to UX/UI design, development, testing, deployment, and maintenance. Implemented OAuth 2.0 authentication, utilized databases, and APIs, and integrated robust security measures throughout the project.

Founder & Data Scientist – Wealthy Mar 2022 - Dec 2022

- Founded Wealthy to empower high school students in choosing their majors, navigating career development, accessing internship and mentorship opportunities, and connecting with industry professionals.
- Developed four courses and incorporated data science into our PowerPoint presentations using Power BI for data-driven decision-making.
- Developed a machine learning recommendation model to suggest the best majors and career paths for students based on questionnaires that capture their interests, skills, personality traits, and other relevant factors.
- Developed a robust matching algorithm using Python, employing machine learning techniques supported by libraries like scikit-learn and TensorFlow, to pair students with mentors. The algorithm took into account students' interests, skills (both technical and soft skills they wished to develop), career goals, availability, and communication preferences, while also considering mentors' expertise and vision for guiding students in their career development.

Intern / Junior Data Scientist – Jordan Realty Solutions Oct 2021 - June 2022

- Improved efficiency for the real estate sales team in analyzing client preferences and needs by 40%, achieved through implementing a custom-built web dashboard using HTML, CSS, and Python.
- Collaborated on developing a web app for appointment scheduling, budget management, and property exploration, achieving a 30% team efficiency gain and 15% increase in sales. Applied coding standards, conducted rigorous code reviews, and ensured seamless continuous deployments.
- Extracted data from 7 disparate sources using Python scripts and APIs for property sourcing.
- Implemented robust data modeling with SQL and NoSQL databases, designed efficient data warehousing solutions with Amazon Redshift and Google BigQuery, and developed ETL pipelines using Apache Airflow & custom Python scripts for optimized data integration processes.

Projects

Sentiment Analysis and Topic Modeling of Top 20 App Reviews on Google Play Store and Apple Store

- Implemented data modeling, warehousing, and built ETL pipelines to efficiently organize, store, and transform data.
- Utilized web scraping with BeautifulSoup and Selenium to gather app reviews and performed text preprocessing using NLTK and spaCy, ensuring high-quality, clean data pipelines for analysis.
- Employed BERT for sentiment analysis and Latent Dirichlet Allocation (LDA) for topic modeling, leveraging machine learning to improve the accuracy of sentiment classification and topic extraction for real-world problems.
- Derived actionable insights on user sentiments and app discussion topics, providing valuable recommendations for app developers and enhancing decision-making processes with real-world problem-solving insights.

Forecasting Hotel Reservation Cancellations: Advanced Machine Learning for Revenue Management

- Employed comprehensive data preparation, which included exploratory data analysis (EDA) to uncover data patterns and distributions. Additionally, utilized statistical analysis and feature engineering techniques such as label encoding and feature scaling to optimize feature relevance and enhance model performance.
- Developed predictive models to forecast hotel reservation cancellations, utilizing a diverse set of machine learning algorithms including Random Forest, Gradient Boosting, SVM, and ensemble methods such as AdaBoost and Balanced Random Forest.
- Applied advanced optimization techniques including Random Forest tuning with Optuna for hyperparameter search, and Neural Architecture Search (NAS) with Bayesian Optimization to automatically identify optimal model architectures. Evaluated model effectiveness using metrics like accuracy, precision, recall, and F1-score.
- Focused on model interpretability using Explainable AI (XAI) techniques, and created interactive visualizations to

clarify model architectures and decision boundaries for both technical and non-technical stakeholders.

Created 10 Dashboards using Power BI and Tableau

- Designed and developed 10 dynamic dashboards using leading business intelligence tools such as Power BI, Quicksight, and Tableau, tailored for domains including sales, economics, marketing, sports, education, and HR.
- Integrated data from SQL databases (e.g., Oracle) and NoSQL sources like MongoDB. Employed advanced data modeling and transformation processes to maintain accuracy and consistency across all dashboards.
- Managed the full dashboard development lifecycle, from data extraction in SQL databases (Oracle, MongoDB) and transformation using tools like SQL Server Integration Services (SSIS), Apache Spark for distributed data processing, and Python (Pandas, NumPy) for versatile data manipulation. Integrated transformed data seamlessly into Power BI and Tableau for deployment, ensuring effective alignment with business reporting requirements.

Technical Skills

- Understanding of Real-Time Operating Systems (RTOS)
- PyTorch & Tensorflow
- Proficient in C/C++ Programming
- Python (Pandas, NumPy, MatPlotLib, Seaborn, Plotly, Dash, IPyWidgets Scikit-Learn (Sklearn), NLTK)
- Web Scraping, Data Extraction, and API Integration
- Microsoft Office Suite (Excel, PowerPoint, Word)
- Data Visualization(Tableau, Statistical visualization)
- Business Intelligence (BI), Microsoft Power BI, Tableau & SQL
- My SQL & MongoDB.
- Git & GitHub, Documentation (Markdown), Technical Writing
- Machine Learning (Supervised/Unsupervised Learning, Classification, Regression, Clustering, Model Evaluation, Hyperparameter Tuning, TensorFlow, Transfer Learning, Ensemble Techniques, Feature Engineering)
- NLP (Word Embeddings, Sentiment Analysis, Topic Modeling, Text Classification)
- Project management tools such as Jira, Asana, and Trello.

Publications

- **Wrote four educational blogs** about business intelligence, data science, and artificial intelligence. Used interactive tools and detailed graphs to make complicated topics easy to understand. Covered topics like data storytelling and predictive modeling.
- **Developed the XAI (Explainable Artificial Intelligence) open-source library**, providing a powerful tool for enhancing the transparency and interpretability of machine learning models. This open-source initiative aimed to demystify complex AI decision-making processes and facilitate the adoption of AI solutions across various industries.