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EDUCATION

University of Arizona
Doctor of Philosophy (PhD) in Systems and Industrial Engineering *May 2023*
Master of Science in Computer Science *2022*
Master of Science in Systems and Industrial Engineering *2018*

TECHNICAL STRENGTHS

Computer Programming	Python, Java, Scala, SQL, Bash, R
Software & Tools	Docker, MlFlow, WandB, Git, Scikit-learn, NLTK, spaCy, Jira, AWS, Azure
Deep Learning Frameworks	PyTorch, HuggingFace, TensorFlow, DyNet, Keras, PyTorch Lightning

RELEVANT COURSES

Design and Analysis of Algorithms, Algorithms for Natural Language Processing, Neural Networks, Applications of Machine Learning, Principles of Machine Learning, Artificial Intelligence for Health and Medicine, Text Retrieval And Web Search, Computational Linguistics, Software Engineering, Advanced Operating Systems, Engineering Statistics, Fundamentals of Optimization, Stochastic Modeling, Applied Cyberinfrastruc, Enterprise Data Management

WORK EXPERIENCE

Graduate Research Assistant, University of Arizona - Multimodal Neural Nets *Aug 2019 - Present*

- Developed multimodal systems for multimedia data, utilizing advanced neural networks including transformers (BERT, Roberta), CNNs (ResNet), and RNNs (LSTM) to capture both spatial and sequential relations of the data
- Implemented Computer Vision approaches to assist in Natural Language Processing tasks, resulting in **statistically significant** improvements in accuracy on multiple benchmarks through the use of on-demand image augmentation from web for a textual question-answering problem.

Revenue Management ML Intern, American Airlines *Aug 2022 - Nov 2022*

- Developed a deep neural network forecasting engine that improved prediction accuracy of flight-level traffic for the Yield Management team by **more than 80%** compared to previous statistical and machine learning frameworks.
- Achieved a significant reduction in prediction mean square errors (**50% reduction**) through the use of multimodal neural network architecture and pre-training on historical data, including time series and multi-dimensional data.

Machine Learning Research Intern, Truveta *May 2022 - Aug 2022*

- Contributed to the company's mission of Saving Lives with Data through the development of data-driven NLP approaches.
- Pre-trained and fine-tuned transfer-based models on clinical text data, resulting in improved overall accuracy for upstream and downstream tasks and significantly increased downstream training and inference speeds (**fourfold and twofold increase**, respectively). Achieved **state-of-the-art** results in the ontology alignment task, with at least a 5% improvement in F1, Hit@1, and MRR compared to previous works.

Data Science Research Intern, RedShred *Mar 2021 - Aug 2021, Jan 2022 - May 2022*

- Implemented a novel plot-processing approach utilizing object detection models and text extraction techniques, resulting in a 69.12% success rate in correctly identifying data from plots, **approaching the state-of-the-art** in the field. Deployed on the RedShred API for automatic processing of PDF documents.
- Utilized HuggingFace framework to develop and train transformer-based methods for document understanding, including segmentation and object detection. These techniques demonstrated strong performance in the field of document analysis.

Teaching Assistant, University of Arizona *Jan 2019 - Jan 2021*

- Introduction to Engineering Probability and Statistics, Survey of Optimization Methods, and Statistical Quality Control.

Graduate Research Assistant, University of Arizona - Machine Dialog System *May 2018 - Aug 2019*

- Developed a smartphone app using NLP and IR techniques, allowing for meaningful conversation with the user through simulation of human speech behaviors. Utilized real-world events, relationships, experiences, and personal desires and aspirations as the basis for the app's conversational data.

Graduate Research Assistant, University of Arizona - ML for Health Care *Aug 2016 - May 2018*

- Various unsupervised machine learning approaches were studied in order to uncover hidden relationships between physiological characteristics of patients with traumatic brain injury.

Student Consultant, Tucson International Airport *Aug 2016 - Jan 2017*

· Conducted an economic impact analysis and created a business plan to improve Tucson Airport Authority's business processes and boost the city's economic growth.

PROJECTS

Music Generator

· Deep neural networks were used to create a music creation tool that automatically generates, extends, and stylizes imported MIDI music compositions.

Mental State of Tweeter

· Recurrent neural networks (e.g. GRU, LSTM) were used to create a multi-label classification model. The designed model achieved top ten in the CodaLab competition.

Recognizing Textual Entailment on SNLI Corpus

· On the Stanford Natural Language Inference (SNLI) challenge, a straightforward but effective Naive Bayes machine learning approach was used, and it produced results that were competitive with those of neural network models.

Implementation of Log-File System on Virtual Flash Drive

· A Log-Structured File System (in Linux) was implemented on a virtual flash drive using C programming language.

Domain Adaptation in Reading Comprehension

· Applied Domain Adaptation, LSTM, BiRNN, GRU, FFN, and Attention unites with PyTorch on the SQUAD Question Answering task.

Programming Distribution Maps for Butterfly Species

· Completed a collaborative project with 12 team members to collect and visualize the distribution and monthly migration maps for 700 North American Butterfly species in an agile context.
· Used University of Arizona High-Performance Computing (HPC) servers, Docker, and Singularity Containers.

Design and Implementation of a Web-Based Database Application

· Worked on the front-end and back-end of a database system that can assist a school class management with its day-to-day operations and decision-making.
· The database system was built using Oracle SQL Server and web-based development tools.

PROFESSIONAL AND PERSONAL DEVELOPMENTS

Manager of the international students' sports activities club (ICAT) at the University of Arizona.	Current
Manager of UA's Computational Medicine and Informatics for Neurological Health (COM-IN) Lab.	2018
Completed Six Sigma Green Belt training and Primavera Project Management certification.	2016
Second place in the state tournament for the college basketball championship, Isfahan, IR.	2014