

Rushrukh Rayan

RushrukhRayan.com | RushrukhRayan40@gmail.com | (414) 739-8037 | github.com/rushrukh | Atlanta, GA

EDUCATION

Kansas State University

Aug 2021 - May 2025 (Expected)

Ph.D. in Computer Science; GPA: 4/4

Chittagong University of Engineering and Tech

Mar 2014 - Dec 2019

BS in Computer Science

WORK HISTORY

Graduate Research Assistant

Jan 2022 - Present

Kansas State University

- Skilled in implementing and testing AI models involving various Neural Network architectures using PyTorch. Able to implement state-of-the-art AI publications to reproduce research results.
- Explainable AI
 - Developed a novel method to explain why an Audio Signal Classifier (**Neural Network**) correctly/incorrectly classifies data inputs in an effort to make AI transparent and accountable. Currently a paper is being written.
 - Developed the method by integrating the AI model (Convolutional Neural Network) with hierarchical audio metadata (**Knowledge Graph**) using **PyTorch** which provides explanations to the AI model's decisions.
- Deep Deductive Reasoning
 - Developed an approach which intends to equip large knowledge bases with advanced search and querying capabilities. The method discovers new knowledge and hidden relationships in a large **Knowledge Graph** using **Sequential Modeling AI** (Pointer Network, **PyTorch**).

Graduate Teaching Assistant

Aug 2021 - Dec 2022

Kansas State University

- Designed lab exercises for the **Big Data and Machine Learning** class which taught graduate students how to use modern tools, **PySpark**, **PyTorch**, and **Python**, to train AI models on large datasets and use those models to solve interesting problems.
- Attended 14 lab-sessions with ~40 graduate students to provide supplemental guidance and answer questions regarding core concepts and code implementation.
- Prepared an Explainable AI seminar class of 4 graduate students which reviewed and explained the inner workings of notable Explainable AI models from state-of-the-art papers.

Software Engineer

Jan 2020 - Jul 2021

EchoLogyx Ltd

- Skilled at developing responsive front-end features such as personalized product recommendations, retention notifications, top product display, and zero-cost A/B tests with **JavaScript**, **jQuery**, and **CSS**.
- Collaborated with stakeholders to identify scope of improvement and generate feature ideas.
- Designed and implemented features for e-commerce through **A/B testing** to identify impact on user-interaction and sales which resulted in **40-60%** increase in user-retention and notable increase in sales across multiple e-commerce platforms.
- Drove the growth of a solo contract engagement to a 6 developer team responsible for 12 net-new contracts valued at \$290K/year.

- Contractor platforms include Louis Vuitton, Dior, Tag Heuer, Fendi, Berluti.

PROJECTS

- Ontology Modeling:
 - Greatly improved the accessibility of unstructured research metadata involving 40 professors, postdocs, and graduate students among 4 US universities by means of an Ontology using Web Ontology Language (OWL).
 - Developing a system to answer queries regarding the research group, projects, research outcomes, locations, etc using a pre-processed Knowledge Graph, SPARQL, and Web Ontology Language.
 - Developed an Ontology Design Pattern which has been submitted to ISWC 2023 Workshop.
 - The developed Ontology has been submitted to KGSWC 2023.
- Mini Autograd - A simplified version of **PyTorch Autograd**, a popular Python library used for neural network training, which keeps track of the computation graph, performs **Backpropagation** and **Gradient Descent** in an **AI** model using **Python** and **NumPy**.
- Shakespeare-like Text Generator - **AI** (Attention - Transformer) text generator which generates unlimited "Shakespeare-like" texts using **Python3** and **PyTorch**.

EXPERTISE

Language	Python, JavaScript, jQuery, C++, C
Database	SQL, PostgreSQL
AI	PyTorch, Neural Networks, Transformers, CNN, Autoencoder, Tensorflow
Other	Git, CSS

PUBLICATIONS

- **Rayan, R.**, Shimizu, C. and Hitzler, P. (2023) An Ontology Design Pattern for Role-Dependent Names, arXiv.org. Available at: <https://arxiv.org/abs/2305.02077>
- **Rayan, R.**, Shimizu, C. and Hitzler, P. (2023) An Ontology for MODS - Metadata Object Description Schema (Submitted to KGSWC 2023).
- **R. Rayan**, M. S. Hossain, and Asaduzzaman, 'Compression of Large-Scale Image Dataset using Principal Component Analysis and K-means Clustering', 2019 International Conference on Electrical, Computer and Communication Engineering (ECCE), Cox's Bazar, Bangladesh, 2019, pp. 1-5.