

# Ajay Krishna Vajjala

Website: [profile.ajaykv.com](https://profile.ajaykv.com)

Linkedin: [linkedin.com/ajaykrishnavajjala](https://linkedin.com/ajaykrishnavajjala)

Github: [github.com/ajaykv1](https://github.com/ajaykv1)

Email : [akrish@gmu.edu](mailto:akrish@gmu.edu)

Mobile : (703)-303-4282

## EDUCATION

- **PhD in Computer Science** Dec 2021 - Present  
*George Mason University*  
*Advised by: Dr. David Rosenblum* Fairfax, VA
- **M.S. in Computer Science** Jan 2021 - Dec 2021  
*George Mason University* Fairfax, VA
- **B.S. in Computer Science** Aug 2017 - Dec 2020  
*George Mason University*  
*Achievements: Dean's List* Fairfax, VA

## RESEARCH INTERESTS

- **Interests:** Recommender Systems, Cross Domain and Context-Aware Recommender Systems, Machine Learning, Transfer Learning, Deep Learning

## SKILLS SUMMARY

- **Languages:** Python, Java, PySpark, React, Node, Express, SQL, C
- **Tools:** Tensorflow, Scikit-Learn, GIT, Matlab, XCode

## EXPERIENCE

- **George Mason University** Fairfax, VA  
*Graduate Research Assistant - Prof. David Rosenblum* May 2022 - Current
  - **Domain Distance for Cross-Domain Recommender Systems:** Introduced a novel approach to calculate distance between two distinct domains and its impact on recommendations in the target domain. Our approach uses Word2Vec, a Natural Language Processing (NLP) approach, to represent tags from each domain as **embeddings**, which is used to calculate the distance between domains. Preparing for the ACM conference on Recommender Systems.
  - **Deep Learning Framework for Cross-Domain Context-Aware Recommender Systems:** Developed a novel deep learning approach, using Tensorflow, for Cross-Domain Context-Aware Recommendation. Our approach builds off of the existing Neural Collaborative Filtering algorithm (NCF) by incorporating context and extending it to work in a Cross-Domain setting. Currently working towards evaluating our approach against existing baseline methods in the RecBole-CDR Library, which was built using PyTorch. Preparing for the ACM conference on Recommender Systems
- **George Mason University - Center of Adaptive Systems of Brain and Body Interaction** Fairfax, VA  
*NSF National Research Trainee Fellow* May 2021 - May 2022
  - **Reentry and Corrections (RAC):**
    - Developed a web application that provides incarcerated individuals with information on reentry and social service supports that they can use upon reentry from jail, which provides incarcerated individuals autonomy over their reentry experience while providing these services in a easily accessible way.
    - Website was built using React for front-end, Node with Express back-end, and MySQL for the database
    - Partnered with American Prison Data Systems (APDS) and DJ Jail to pilot the website on APDS tablets across jails in the U.S. as soon as 2023.
- **International Software Systems Inc.** Greenbelt, MD  
*Software Development Intern* May 2020 - Aug 2020
  - Developed a web application that provides patients and staff at hospitals to communicate efficiently.
  - Used React for the front-end, developed multiple REST API's using Node with Express for the back end, and MongoDB for the database.
  - Worked on an interdisciplinary team of all backgrounds to successfully deploy the web application.

## ACADEMIC PROJECTS

- **Movie Recommender System:** Used TensorFlow to build a Recommender System with deep neural networks, using the Movielens dataset. Created an embedding for users and items, and fed the concatenated user and item **embeddings** into multiple deep layers using the **tower method**. Achieved roughly 90% rating prediction accuracy, and was optimized using Stochastic Gradient Descent.
- **NYC Taxi Trip Duration with Enhanced Decision Tree Regressor:** Predicted taxi trip duration using an enhanced decision tree regressor, which fits the values in the leaf nodes to a linear regression model. The Enhanced model performed 80% better compared to the regular decision tree model. Built using Pyspark and AWS EMR cluster.
- **Amazon User Review Sentiment Analysis:** Used Word2Vec, a Natural Language Processing (NLP) technique, to generated word embeddings for each word in the review. Represented each review as an average of its **word embeddings**, and performed KNN to classify whether a review is positive or negative. The model was able to achieve 80% accuracy.