Syed Asad Rizvi

(832)-643-9462 • syed.rizvi@yale.edu • New Haven, CT
Personal Website: https://syedarizvi.com • GitHub: https://github.com/SyedA5688
Google Scholar: https://scholar.google.com/citations?user=2rhnnZ4AAAAJ

RESEARCH INTERESTS

Machine Learning, Graph Neural Networks, Explainable AI (XAI), Self-supervised Learning

EDUCATION

College of Natural Science and Mathematics, University of Houston, TX
Bachelor of Science in Computer Science **August 2019 - December 2022**
Cumulative GPA: 3.92

Relevant Coursework: Artificial Intelligence, Fundamentals of Medical Imaging, Digital Image Processing, Data Science, Multivariable Calculus, Statistics, Linear Algebra, Software Design, Algorithms.

RESEARCH EXPERIENCE

Yale University, New Haven, Connecticut **June 2022 – Present**
Visiting Research Student (van Dijk Lab)

- Advised by Dr. David van Dijk, Department of Computer Science and Internal Medicine
- Worked on a novel Graph Neural Network architecture for capturing feature-level interaction between nodes using an attention-based message-passing framework

Rice University, Houston, TX **August 2022 – March 2023**
Undergraduate Research Student

- Advised by Dr. Xia Hu, Department of Computer Science, and Dr. Xiaoqian Jiang, UT Health Science
- Worked on finetuning framework for increased interpretability in vision-language contrastive models on radiology data

Houston Methodist, Houston, TX **December 2021 – August 2022**
Undergraduate Research Student

- Advised by Dr. Vittorio Cristini and Dr. Prashant Dogra, Department of Mathematics in Medicine
- Worked on a Spatiotemporal Graph Neural Network architecture for COVID-19 infection forecasting accounting for daily international flight patterns
- Developed a perturbation-based explainability framework for spatiotemporal GNNs

Taipei Medical University, Taipei, Taiwan **March 2021 – April 2021**
Data Analyst Intern

- Advised by Dr. Syed Abdul-Shabbir, Graduate Institute of Biomedical Informatics
- Worked on data processing, correlation analysis, and visualization on wearable device data measurements taken from 18 Taiwanese patients

University of Houston, Houston, TX **September 2020 – May 2022**
Undergraduate Research Student (HULA Lab)

- Advised by Dr. Hien V. Nguyen, Department of Electrical and Computer Engineering
- Worked on efficient semi-supervised Convolutional Neural Networks for medical image generation and segmentation

INDUSTRY EXPERIENCE

Amazon, Austin, TX **May 2022 – August 2022**

Software Development Engineer Intern

- Developed a launcher application for starting customer screen sharing sessions on Amazon devices using the Spring framework in Java

Phillips 66, Houston, TX **May 2021 – August 2021**

IT Intern (Natural Language Processing)

- Trained entity recognition models on land exchange contract documents
- Identified 6 domain-specific entities with 87% overall model precision
- Deployed models to AzureML Cloud Platform and developed an automated Azure Function App to run preprocessing and inference on new contract documents within 12 seconds

PUBLICATIONS

Cicalese, P.A., **Rizvi, S.A.**, Wang, V., Patibandla, S., Yuan, P., Zare, S., Moos, K., Batal, I., Clahsen-van Groningen, M., Roufosse, C. and Becker, J. U. "MorphSet: Improving Renal Histopathology Case Assessment Through Learned Prognostic Vectors." *International Conference on Medical Image Computing and Computer-Assisted Intervention* (MICCAI). Springer, Cham, 2021.

Rizvi, S. A., Cicalese, P. A., Seshan, S. V., Sciascia, S., Becker, J. U., Nguyen, H. V. "Histopathology DatasetGAN: Synthesizing Large-Resolution Histopathology Datasets." *2022 IEEE Signal Processing in Medicine and Biology Symposium* (SPMB). IEEE, 2022.

PREPRINTS

Rizvi, S. A., Tang, R., Jiang, X., Ma, X., Hu, X. "Local Contrastive Learning for Medical Image Recognition." *arXiv preprint arXiv:2303.14153* (2022).

Rizvi, S. A., Nguyen, N., Lyu, H., Christensen, B., Caro, J. O., Zappala, E., Brbic, M., Dhodapkar, R. M., Dijk, D. V. "AMPNet: Attention as Message Passing for Graph Neural Networks." *arXiv preprint arXiv:2210.09475* (2022).

Rizvi, S. A., Awasthi, A., Peláez, M. J., Wang, Z., Cristini, V., Nguyen, H. V., Dogra, P. "Deep Learning-Derived Optimal Aviation Strategies to Control Pandemics." *arXiv preprint arXiv:2210.10888* (2022).

PRESENTATIONS

- Attention as Message-Passing for Graph Neural Networks, Yale University
- Mayday Screen Sharing Application, Amazon
- COVID-19 Infection Forecasting with Explainable Spatiotemporal GNNs, University of Houston
- Regularization techniques in Convolutional Neural Networks, University of Houston
- MorphSet Project Oral Abstract, 2021 AI in Nephropathology Workshop in Amsterdam
- Natural Language Processing and Entity Recognition Models, Phillips 66
- Custom Image Annotation Interfaces using LabelBox, University of Buffalo Computer Vision Group

AWARDS AND RECOGNITIONS

- Provost's Undergraduate Research Scholarship ($1000), University of Houston, Spring 2022
- Dean's Distinguished Scholar's List, University of Houston
- First prize in the 2021 HP & AWS Bot-a-thon
- Third prize ($3000) in the 2020 AWS & NVIDIA Environmental Hackathon

INDEPENDENT PROJECTS

Node Classification Using Graph Neural Networks **March 2022**

- Implemented prominent GNN architectures for node classification and edge importance analysis on the Cora citation network
- Developed in Pytorch and Pytorch Geometric for CS 4337

AWS Lex Bot Generation Pipeline **January 2021**

- 1st place finish among 20+ teams at the 2021 HP & AWS Bot-a-thon competition
- Wrote chatbot configuration files and led presentation development

Autoencoder Anomaly Detection **August 2020**

- 3rd place finish in the AWS & NVIDIA Environmental Hackathon ($3000 award)
- Trained an unsupervised autoencoder machine learning model on environmental sensor data taken from Amazon's Seattle Sphere conservatories

NutrientView Mobile App **July 2020**

- Nutrient logging mobile app utilizing image recognition services to track consumed meals
- Integrated an Azure Q&A chatbot to provide interactive feedback about different nutrients
- Developed using React Native, IBM Watson image recognition, Azure bot service, Firebase, and the Edamam Nutrition Analysis API

SKILLS

Programming Languages:	Python, C++, Java, R, MATLAB, SQL, JavaScript
Libraries:	Pytorch, Pytorch Geometric, Tensorflow, Scikit-learn, Pandas, Numpy
Tools:	Parallel programming, Distributed training, HPC job scheduling, Git

ACTIVITIES

Management Information Systems Student Organization **January 2020 – December 2020**

Professional Development Committee Member

- Worked with teams of 20+ committee members to perform 60+ resume reviews per semester
- Delivered a presentation on IT candidate profile development at the MISSO professional development workshop to over 80 students