Yuanqi DU

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SUMMARY

Undergraduate researcher trained in artificial intelligence, with strong communication skills developed from extensive research experience and ability to work independently or as part of a team. Special expertise in the following areas: **Machine Learning; Graph Mining; Computational Biology**.

EDUCATION

George Mason University, Fairfax, US Aug 2017 - May 2021
B.S. in Computer Science
Curriculum GPA: 4.00/4.00 | Major Courses Score: 16/18 A+

Huaqiao University, Xiamen, China Aug 2016 - June 2021
B.S. in Computer Science (taught in English)
Curriculum GPA: 4.67/5.00

PUBLICATIONS

Xiaojie Guo, ***Yuanqi Du***, Liang Zhao. Property Controllable Variational Autoencoder via Invertible Mutual Dependence, accepted in the ICLR conference.

Pengbo Liu, Hu Han, ***Yuanqi Du***, Heqin Zhu, Yinhao Li, Feng Gu, Honghu Xiao, Jun Li, Chunpeng Zhao, Xinbao Wu, S. Kevin Zhou*, Deep Learning to Segment Pelvic Bones: Large-scale CT Datasets and Baseline Models, accepted in IPCAI conference.

Yuanqi Du, Xiaojie Guo, Amarda Shehu, Liang Zhao. Interpretable Molecule Generation via Disentanglement Learning. ACM Conference of Bioinformatics and Computational Biology (BCB) Workshops: Computational Structural Biology Workshop (CSBW) 2020.

Yuanqi Du, Anowarul Kabir, Liang Zhao, Amarda Shehu. From Interatomic Distances to Protein Tertiary Structures with a Deep Convolutional Neural Network. ACM Conference of Bioinformatics and Computational Biology (BCB) Workshops: Computational Structural Biology Workshop (CSBW) 2020.

Panneer Selvam Santhalingam, ***Yuanqi Du***, Riley Wilkerson, Al Amin Hosain, Ding Zhang, Parth Pathak, Huzefa Rangwala, and Raja Kushalnagar. Expressive ASL Recognition using Millimeterwave Wireless Signals. IEEE International Conference on Sensing, Communication, and Networking (SECON) 2020.

Yuanqi Du, Nguyen Dang, Riley Wilkerson, Parth Pathak, Huzefa Rangwala, Jana Kosecka. American Sign Language Recognition Using an FMCW Wireless Sensor. AAAI Conference on Artificial Intelligence (AAAI) 2020 (Student Abstract).

PREPRINTERS & WORKING PAPERS

Yuanqi Du, Xiaojie Guo, Amarda Shehu, Liang Zhao. Controlling the Generation of Molecules via Interpretable Variational Autoencoders, submitted to a Bioinformatics journal.

Yuanqi Du, Quan Quan, Hu Han, Kevin Zhou*. Where is the disease? Semi-supervised pseudo-normality synthesis from an abnormal image, submitted to a Medical Image Analysis conference.

Taseef Rahman, ***Yuanqi* Du**, Amarda Shehu. Generative Adversarial Learning of Protein Tertiary Structures, submitted to a Bioinformatics journal.

Quan Quan, Qiyuan Wang, Liu Li, ***Yuanqi Du***, S. Kevin Zhou*, CT Film Recovery via Disentangling Geometric Deformation and Photometric Degradation: Simulated Datasets and Deep Models, submitted to a Computer Vision conference.

RESEARCH EXPERIENCES

Microsoft Research Asia | Beijing, China Nov 2020 - Present
Research Intern | Mentor: Jianwei Zhu, Bin Shao

- Working on protein structure prediction related topics in computational biology, machine learning group.
- Developing algorithms to predict protein structure (3D coordinate/contact map) based on Multiple Sequence Alignment.

Graph Mining and Applications | Fairfax, VA Feb 2020 - Present
Research Assistant | Advisor: Amarda Shehu, Liang Zhao

- Utilizing graph neural network for graph generation, structure prediction and its application on AI for Drug Discovery.
- Exploring graph neural networks, deep generative models, conditional generation, and applications on biological molecules.

Protein Structure Prediction | Fairfax, VA Jan 2020 - Present
Research Assistant | Advisor: Amarda Shehu, Liang Zhao

- Working on a biological protein structure prediction project, predicting 3D structures from relative distances.
- Designing deep learning models to conquer the prediction challenge, converting protein distance map into 3-D coordinates.
- Acquiring knowledge of biological structure, e.g., amino acid sequence/tertiary structure, developing methods to handle data.

Application of Millimeter-wave Radar | Fairfax, VA Apr 2019 – Dec 2020
Research Assistant | Advisor: Parth Pathak

- Conducting research on the application of millimeter-wave radar in 3D human tracking and human gesture recognition.
- Mastering deep learning skills, working closely with hardware, transferring cross-domain knowledge from computer vision, and learning traditional techniques on Point Cloud tracking.

American Sign Language Recognition | Fairfax, VA Jun 2019 - Aug 2019
Researcher | Mentors: Parth Pathak, Jana Kosecka, Huzefa Rangwala

- Led a cross-disciplinary research, utilized a millimeter-wave sensor to recognize American Sign Language (ASL).

- Succeeded to design a workable system for a novel task and collaborated with the team using different modalities (Kinect, IMU) to recognize ASL.

Ensemble Anomaly Detection Algorithm | Fairfax, VA Oct 2018 - March 2019
Research Assistant | Advisor: Carlotta Domeniconi

- Worked on an ensemble anomaly detection algorithm research project.
- Dived into anomaly detection, learned tens of anomaly detection techniques, and understood the ensemble learning principle.

PROFESSIONAL EXPERIENCES

Chinese Academy of Sciences, Institute of Computing Technology | Beijing, China Aug 2020 - Dec 2020
Research Intern | Advisor: Hu Han, S. Kevin Zhou

- Working on a semi-supervised medical image generation project to synthesize pseudo-normality and pseudo-abnormality images for data augmentation and visual inspection.
- Exploring the field of image generation, medical image translation, semi-supervised, and multi-task adversarial learning.

Generic Auto Machine Learning Pipeline Project | Remote Apr 2020 - Jul 2020
Application Project (with Yifan Xiao from Google Cloud AI)

- Mentored by a Machine Learning Engineer from Google to build a generic Machine Learning pipeline, including model building, parameter tuning, model testing, and model deployment.
- Expanded the horizon as a practitioner, understood the difference and similarity between research and industrial engineering, mastered AutoML concept and Machine Learning pipeline.

Department of Computer Science at GMU | Fairfax, VA Aug 2018 - Dec 2019
Teaching Assistant (Object-oriented Programming, Data Structures, Data Mining)

- Assisted professor with administrative and academic tasks, tested and graded students' code, held office hours, review sessions.
- Provided online and in-person supports by answering questions about lectures, lab exercises, projects, and research insights.
- Observed and summarize problems and gave suggestions based on the problems to professors to improve the curriculum.

Volgenau School of Engineering at GMU | Fairfax, VA Feb 2019 - May 2019
Peer Mentor

- Guided students to think of problems in more professional and engineering aspects and long-term studies.
- Aided students with questions, and demonstrated how the knowledge is applied in the industry and the prospects of the fields.
- Mastered how to break complicated things into small parts, how to connect the knowledge with real-world applications.

PROJECTS

Student Performance Prediction Analysis | Fairfax, VA Aug 2020 - Present
Student Mentor | Advisor: Huzefa Rangwala

- Survey on the educational data science literature, go deeper into one problem in realizing the challenges in the field.
- Experience leading a research project including mentoring and discussing with the student, as well as reporting to collaborators.

Deepfake Detection | Fairfax, VA Jan 2020 - May 2020
Student Organization Project

- Explored Deepfake detection, reviewed literature, and built models to solve the problem.
- Learned the current progress on Deepfake detection, learned how to do Deepfake detection with current SOTA models.

AWARDS & ACHIEVEMENTS

NeurIPS Travel Award (2020)
Distinguished Undergraduate Teaching Assistant Award (2019-2020)
Distinguished Undergraduate Research Award (2019-2020)
NSF REU Fellowship (2019-2020)
GMU OSCAR Fellowship summer (2019)
Outstanding Undergraduate Teaching Assistant Award (2018-2019)
Dean's List (All semesters)

EXTRACURRICULAR ACTIVITIES

Community: Student Member of ACM, IEEE, AAAI, SIAM, ASA, and ACM SIGBIO
Activities: Microsoft Student Ambassador, NetBrain Club Research Director, GMU OSCAR Research Celebration, GMU OSCAR Research Celebration
Volunteering: VSE Prospective Student Visiting Day Student Leader, AAAI Student Technical Volunteer

PROFESSIONAL SERVICES

Co-organize KDD 2021 (Web Team Member)
Co-organize DeepSpatial 2020 co-located with KDD 2020 (Web Master)
Co-organize AI Applications Workshops at GMU
Contribute to the open-source community (e.g., publish codes and datasets)

SKILLS & ABILITIES

Programming Skills: Python, Java, C, MySQL, R, C++, Assembly Language, Lisp, Haskell, LaTeX
Tools: TensorFlow/Keras/PyTorch, Dreamweaver, Tableau
Coursera Certificates: Machine Learning; Deep Learning; Deep Neural Network with PyTorch; Probabilistic Graphical Models