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; Structured Data Mining; Computational Biology**.

EDUCATION

George Mason University, Fairfax, Aug 2017 - Expected in May 2021
B.S. in Computer Science
Curriculum GPA: 4.0/4.0 | Major Courses Score: 16/18 A+

Huaqiao University, Xiamen, China Aug 2016 - June 2017
B.S. in Computer Science
Curriculum GPA: 4.67/5.0

PUBLICATIONS

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 Bioinformatics journal.
Yuanqi Du, Xiaojie Guo, Amarda Shehu, Liang Zhao. Controllable Molecule Generation via Monotonic Constraints, submitted to RECOMB conference.
Xiaojie Guo, ***Yuanqi Du***, Liang Zhao. Property Controllable Variational Autoencoder via Invertible Mutual Dependence, submitted to ICLR conference.
Yuanqi Du, Quan Quan, Hu Han, Kevin Zhou. Pseudo-Health Synthesis: A Confidence-guided Multi-tasked Adversarial Network, going to submit to TMI journal.
Yuanqi Du, Anowarul Kabir, Liang Zhao, Amarda Shehu. Deep Learning for Tertiary Structure Reconstruction at Varying Representational Detail, going to submit to Molecules journal.
Taseef Rahman, ***Yuanqi* Du**, Amarda Shehu. Generative Adversarial Learning of Protein Tertiary Structures, going to submit to Molecules journal.

RESEARCH EXPERIENCES

Microsoft Research Asia | Beijing, China Nov 2020 - Present
Research Intern
- Working on protein structure prediction related topics in machine learning group.
- Developing algorithms to predict protein structure (3D coordinate/distance matrix/contact map) based on Multiple Sequence Alignment.

Chinese Academy of Sciences, Institute of Computing Technology | Beijing, China Aug 2020 - Present
Research Intern | Advisor: Hu Han, Kevin Zhou
- Working on a multi-task medical image analysis project.
- Exploring the field of image generation, conditional generation, medical image analysis, and translation.

Interpretable Molecule Generation | Fairfax, VA Feb 2020 - Present
Research Assistant | Advisor: Amarda Shehu, Liang Zhao
- Utilizing graph neural network and deep generative model to generate molecular graphs and interpret the process by disentanglement learning.
- 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.
- 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 Radar | Fairfax, VA Apr 2019 - Present
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 cross-disciplinary research, utilized a millimeter-wave sensor to recognize American Sign Language (ASL).
- Achieved up to 95% accuracy on ASL word-level recognition, mastered leadership, cross-disciplinary collaboration, hardware manipulation, human-computer interaction knowledge and tackled a real-world machine learning challenge.
- Succeeded to design a workable system for a novel task and collaborated with the team using Kinect 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

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

- 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.

Ynet Interactive Technologies Ltd. | Beijing, China Dec 2018 - Jan 2019
Software Engineer Intern

- Implemented various components, e.g., Interceptors, and created required logic by connecting components in certain ways.
- Acquired the skeleton of a web system and comprehended how to work on a large program step by step and perform as a team.

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 (with Dom Huh)

- 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

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

EXTRACURRICULAR ACTIVITIES

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

PROFESSIONAL SERVICES

Co-organize DeepSpatial 2020 co-located with KDD 2020 (WebMaster)
Co-organize Applications in AI Workshops at GMU
Co-organize Deep Learning, Reinforcement Learning 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 (Intermediate), Dreamweaver (Intermediate), Tableau (Basic)
Coursera Certificates: Machine Learning; Deep Learning; Deep Neural Network with PyTorch; Probabilistic Graphical Models