

# Yuanqi Du

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## EDUCATIONS

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**George Mason University**

*B.S. in Computer Science*

GPA: 4.0/4.0

Major: 16/18 A+, 2/18 A

**Fairfax, VA**

*Aug 2017 - May 2021*

## RESEARCH EXPERIENCES

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**Application of Graph Neural Network on Molecule Generation**

**Fairfax, VA**

*Research Assistant (Advisor: Amarda Shehu, Liang Zhao)*

*Feb 2020 - Present*

- Working on a graph neural network application problem (biological molecule generation)
- Exploring the field of graph neural networks and applications on biological molecules

**Application of Milli-meter Wave Signals**

**Fairfax, VA**

*Research Assistant (Advisor: Parth Pathak)*

*Apr 2019 - Present*

- Work closely with a professor and a PhD student on milli-meter wave signals related research projects
- Collect, clean, pre-process, analyze, visualize the data, build deep learning model and generative model to solve problems
- Practice and master the skills of deep learning and the cycle of data analysis, actively participate in research projects and improve the skills of communication and collaboration in a team

**Protein Structure Classification**

**Fairfax, VA**

*Research Assistant (Advisor: Amarda Shehu, Liang Zhao)*

*Jan 2020 - May 2020*

- Collaborate with an undergraduate on a biological protein structure classification project
- Design deep learning models to conquer the classification challenge, achieve 93% accuracy compared to the traditional machine learning models largely used in the literature
- Acquire knowledge of biological structure, e.g. primary/secondary structure, master the skill to create deep learning models to solve application problems

**American Sign Language Recognition**

**Fairfax, VA**

*Researcher (Mentors: Parth Pathak, Jana Kosecka, Huzefa Rangwala)*

*Jun 2019 - Aug 2019*

- Utilized a FMCW wireless sensor to recognize ASL (American Sign Language) grouped with people from other disciplines (e.g. Electrical Engineering, Bio-Engineering) and professional ASL users
- Created a data preprocessing model (Cell Division Algorithm) for wireless sensor cloud point time series data and selected the best compatible machine learning model to make 95% accuracy on a single user with a list of 19 common words (30 samples of each) and achieved 80% accuracy on cross-user (3 users) with 30% different users' data combined
- Succeeded to design a workable system for a novel task with few supporting related works and collaborated with the team using Kinect (Camera) to recognize ASL

**Ensemble Anomaly Detection Algorithm**

**Fairfax, VA**

*Research Assistant (Advisor: Carlotta Domeniconi)*

*Oct 2018 - March 2019*

- Assisted professor and PhD student with a data mining research project

- Pre-processed datasets [R], analyzed datasets [Python] and tested the ensemble algorithm on the datasets
- Learned how to clean, pre-process, analyze, visualize data and improved the ability to solve problem individually

## PROFESSIONAL EXPERIENCES

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### Department of Computer Science at George Mason University

Fairfax, VA

#### *Undergraduate Teaching Assistant*

Aug 2018 - Dec 2019

- Assist professor with administrative and academic tasks in the Object-oriented Programming, Data Structures and Data Mining courses, e.g. Test and Grade students' code with certain expectations, and hold office hours, review sessions
- Provide online and in-person academic supports to students by answering questions pertaining to class lectures, lab exercises, projects and career/research insights
- Observe and summarize problems which many students have in order to provide feedback and give suggestions based on the problems to professors to improve the curriculum

### Volgenau School of Engineering at George Mason University

Fairfax, VA

#### *Peer Mentor*

Feb 2019 - May 2019

- Guided students to think of problems in more professional and engineering aspects and long-term studies
- Aided students with their questions, e.g. projects, obscure concepts, and demonstrated how the knowledge is applied in the industry and the prospects of the fields to make them understand better
- Mastered how to break complicated things into small parts and interpret them piece by piece, how to connect the knowledge with real-world applications and how to convey the ideas to others clearly

### Ynet Interactive Technologies Ltd

Beijing, China

#### *Software Engineer Intern*

Dec 2018 - Jan 2019

- Involved in a team with the development of the Internet Financial Platform 2.0
- Implemented various components, e.g. Interceptors, and created required logic by connecting components in certain ways
- Acquired the skeleton of a well-developed web system and comprehended how to work on a large program step by step and perform as a team

## PROJECTS

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### Generic Auto Machine Learning Pipeline Project

Remote

#### *Self-motivated Learning Project (with Yifan Xiao)*

Apr 2020 - Jul 2020

- 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 deeply the difference and similarity between academic research and industry engineering, mastered AutoML concept and Machine Learning pipeline

### Deepfake Detection

Fairfax, VA

#### *Student Organization Project (with Dom Huh)*

Jan 2020 - May 2020

- Explored Deepfake detection, reviewed literature and built models to solve the problem
- Collaborated with another senior student and led the project in the student organization (NetBrain)
- Learned the current progress on Deepfake detection, learned how to do Deepfake detection with current SOTA models

## PUBLICATIONS

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- **Yuanqi Du**, Xiaojie Guo, Amarda Shehu, Liang Zhao. Interpretable Molecule Generation via Disentanglement Learning. Submitted to a bioinformatics venue (Under Review)
- Panneer Selvam Santhalingam, **Yuanqi Du**, Riley Wilkerson, Al Amin Hosain, Ding Zhang, Parth Pathak, Huzefa Rangwala, and Raja Kushalnagar. Expressive ASL Recognition using Millimeter-wave 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).

## SKILLS

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- Programming Skills: Python (Advanced), Java (Advanced), C (Proficient), MySQL (Proficient), R (Basic), C++ (Basic), Assembly Language (Basic), Lisp (Basic), Haskell (Basic), LaTeX (Basic)
- Tools: TensorFlow/Keras/PyTorch (Intermediate), DreamWeaver (Intermediate), Tableau (Basic)
- Certificates: **Machine Learning** (Coursera), **Deep Learning** (Coursera), **Deep Neural Network with PyTorch** (Coursera), **Probabilistic Graphical Models I** (Coursera)
- Languages: English (Fluent), Chinese (Native)

## AWARDS & ACHIEVEMENTS

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| • Distinguished Undergraduate Teaching Assistant Award | 2019-2020     |
| • Distinguished Undergraduate Research Award           | 2019-2020     |
| • NSF REU Fellowship                                   | 2018-2020     |
| • GMU OSCAR Fellowship                                 | Summer 2019   |
| • Outstanding Undergraduate Teaching Award             | 2018-2019     |
| • Dean's List  | all semesters |
| • China 1+2+1 Program Future Elite Scholarship         | 2018          |

## Professional Service

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- Co-organize DeepSpatial 2020 co-located with KDD 2020 (Web Master)
- Co-organize Applications in AI Workshops at GMU
- Co-organize Deep Learning, Reinforcement Learning Workshops at GMU

## References

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### **Liang Zhao**

Assistant Professor, George Mason University

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### **Amarda Shehu**

Professor, George Mason University

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### **Parth Pathak**

Assistant Professor, George Mason University

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### **Huzefa Rangwala**

CS Depart Chair, George Mason University

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### **Carlotta Domeniconi**

Associate Professor, George Mason University

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### **Yifan Xiao**

Cloud AI ML Engineer, Google

**Address:** 1600 Amphitheatre Pkwy, Mountain View, CA 94043

**Tel:** (872)-588-2791

**Email:** xiaoyifan@google.com

## Extracurricular Activities

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- Activities: NetBrain Club (Research Director), GMU ASA (Member), GMU ACM (Member), GMU IEEE (Member), GMU OSCAR Research Celebration 2019, GMU OSCAR Research Celebration 2020
- Volunteering: VSE Prospective Student Visiting Day Student Leader