

## Multiple Ph.D. Positions in JQub at George Mason University for Spring24/Fall24

Aug 22, 2023

### Open Position: Quantum Computing Research (Who are you supposed to work with?)

*[Topic]* The topics include but are not limited to (1) quantum security, (2) quantum learning, (3) quantum circuit simulation, (4) quantum noise suppression, and (5) quantum system visualization.

*[Number of openings]* **2**

*[PI]* **Dr. Weiwen Jiang** (<https://jqub.ece.gmu.edu/categories/bio/>). Dr. Jiang has been an assistant professor in the Department of Electrical and Computer Engineering since 2021. He was a Post-Doctoral Researcher at the University of Notre Dame and a research scholar at the University of Pittsburgh. He obtained Ph.D. at Chongqing University in 2019. Dr. Jiang's research received **IEEE Transactions on Computer-Aided Design Donald O. Pederson Best Paper Award; ICCD Best Paper Award; NVMSA Best Paper Award**; best paper nominations in **DAC'19, CODES+ISSS'19, and ASP-DAC'20**. His team received First Place of the 31st ACM SIGDA University Demonstration at DAC 2021, the Second Place of the 32nd ACM SIGDA University Demonstration at DAC 2022 and won the Top Winning Awards at IEEE Services Hackathon 2020. His research received funding from **NSF, DOE, Facebook (Meta), and local industry collaborators**.

*[Requirements - Math]* Good understanding of Advanced Mathematics, Linear Algebra, and Probability and Statistics.

*[Requirements - CS]* (1) Mastering at least one programming language, such as C, C++, or Python. (2) Familiar with Algorithms.

### JQub Introduction (Why are you pursuing Ph.D. in JQub?)

*[History]* Dr. Jiang's Quantum-Classical Computer-Aided Design Lab (JQub) was established at George Mason University in **Fall 2021**. (<https://jqub.ece.gmu.edu/>)

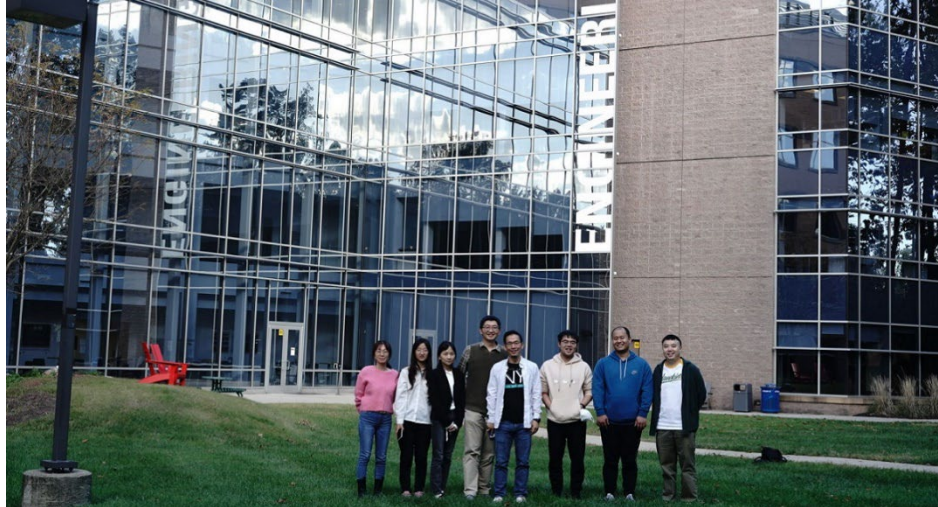
*[Team]* Up until now, the team has **2 faculty members, 5 Ph.D. students, and 2 Master students**.

*[Research]* The team focuses on the **hardware/software co-design** for broad computing systems. The target application ranges from computer vision, natural language processing to medical-related (e.g., imaging and drug discovery) AI applications. The target hardware platform ranges from classical computing (i.e., FPGAs, ASICs, Computing-in-Memory, Mobile Phones, etc.) to quantum computing.

*[Numbers – Funding]* Since the establishment of JQub, the team has secured **\$2.28 million** in funding in total, of which **\$1.08 million** funding is shared by JQub's faculty members. These fundings are from NSF, NIH, DOE, companies, etc.

*[Numbers - Paper]* Since the establishment of JQub, within **2 years**, the team has published **36 papers** in total. There are **18 papers** whose first authors are JQub's students, including **4 DAC, 3 ICCAD, 4 IEEE Quantumweek**.

*[Numbers - Time]* The average time for the first accepted first-author paper is **8.4 months**. Up until now, all students have peer-reviewed publications within **one year**.



## George Mason University Introduction (Why GMU?)

### Computer Engineering/Science Related Ranking:

- USNews Computer Engineering ranking: #64
- CSRanking: #34 (Up until now, Dr. Jiang ranked #6 in Mason's list)

### Location: Fairfax (The following advantages are based on results generated by *ChatGPT*)

- **Diverse Culinary Scene:** Fairfax boasts a diverse range of restaurants offering a variety of international food options, ensuring international students can enjoy familiar flavors and explore new culinary experiences.
- **Ethnic Markets:** The area is home to ethnic markets and Asian grocery stores, providing international students with access to ingredients and products from their home country, helping them maintain cultural connections while abroad.
- **Safe Environment:** Fairfax is known for its safety and low crime rates, providing a secure living environment for Chinese students pursuing their PhDs, thus contributing to peace of mind and a conducive learning atmosphere.
- **Career Opportunities:** The proximity to Washington, D.C., and the thriving Northern Virginia tech corridor presents Chinese PhD students with a multitude of internship and job opportunities in sectors such as technology, government, and consulting.
- **Networking Potential:** Fairfax's location within the D.C. metropolitan area facilitates networking opportunities with professionals, fellow students, and experts in various fields through attending seminars, workshops, and industry events.

### Contact

- Please send your resume, transcript, research experience, publications to [jqub.gmu@gmail.com](mailto:jqub.gmu@gmail.com).
- Before *interviewing*, **please have a quick read of the following papers** to have a better understanding of the research that happened at JQub.
  - <https://www.nature.com/articles/s41467-020-20729-5> (Quantum learning)
  - <https://arxiv.org/pdf/2304.04666.pdf> (quantum noise suppression)
  - <https://arxiv.org/pdf/2307.05510.pdf> (quantum circuit simulation)