Pak Hong (James) Leung

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Projects:

- Burgler (fast-food ordering application)
- Quantum Circuit Simulator
- Laser Pulse Optimisation

Experience and Education

Individual Full-stack Developer   2018 – now

My focus is to create and combine SPA websites and RESTful API's, using mostly Angular and .Net Core. Applications are deployed to Azure and DigitalOcean, either standalone or in dockerised containers, with an automated CI / CD workflow and Git version control.

Duke University: Ph.D. student (graduated 2020)   2018 - 2020

Majoring in physics, I was tasked to simulate quantum circuit operations in a trapped ion system. Specifically, I

- Wrote my own quantum circuit simulator in Python, resulting in over 90 % agreement between simulation and experiment.
- Created an optimisation suite for laser pulse control, which suppressed quantum gate error rates to under 0.01%.
- Presenting my work to experimentalists and establishing teamwork with other control theorists.

Georgia Tech: Graduate Teaching Assistant   2015 - 2017

My main responsibility was to nurture undergraduate students in physics and engage them in interactive labs and Q&A sessions. Other tasks include grading mid-term exams, handling experimental hardware, and teaching students basic Python using IDLE.

Select Publications

- Robust 2-qubit Gates in a Linear Ion Crystal Using a Frequency-Modulated Driving Force
- Entangling an Arbitrary Pair of Qubits in a Long Ion Crystal
- Two-qubit entangling gate within an Arbitrarily long Chains of Trapped Ions

Summary

My passion for developing software began during my Ph.D. programme in physics, where I developed Python functions that solved critical physical problems in quantum computation. I have gathered extensive experience in leading teams of researchers, mentoring junior students, and writing peer-reviewed scientific papers. Now with 5+ years of experience in object-oriented programming, I build web applications with smooth user experience and solid back-end services, a staple in modern software development.

Skill Set

- Rigorous analytical thinking from academic training
- C#
- .Net Core
- Typescript / Javascript
- Angular 2+
- React
- Express
- Node.js
- Python
- Jupyter lab
- Docker
- Git
- HTML / CSS
- Bootstrap 4
- SQL Server
- Azure Devops
- Visual Studio
- Algorithms (LeetCode)