Betis Baheri

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Education

Kent State University   Kent, OH
Ph.D. in Computer Science, Advisor: Qiang Guan, GPA: 4.00   2019–Current

Kent State University   Kent, OH
M.S. in Computer Science, GPA: 4.00   2018–2020
- Thesis: "MARS: Multi-Scalable Actor-Critic Reinforcement Learning Scheduler"

Kent State University   Kent, OH
B.S. in Computer Science, GPA: 3.652   2015–2018

Research Interests

- Research on Quantum Computing with Dr. Qiang Guan (PhD. Program), Kent State University 2019 - Current

- Research on HPC cloud Systems with Dr. Qiang Guan (Master Program), Kent State University 2019 - 2020

- Research on Security and Privacy with Dr. Kambiz Ghazinour (Master Program), Kent State University 2016 - 2019

Experience

Kent State University   Kent, OH
Computer Communication Networks   Fall 2022
- Instructor
- Teaching Network Concepts

Kent State University   Kent, OH
Research and Deployment Machine Learning Applications   2020 - Current
- Machine Learning Development on HPC Systems
- Developing and deploying CPU/GPU-based Machine Learning applications on various systems, including HPC and cloud systems. Familiar with Python, C/C++, Tensorflow, Pytorch, CUDA, MPI, Slurm, and recent ML libraries.
- System Administration for GUANS Lab at Kent State University
- Managing and maintaining Linux, VM, and Windows-based servers. Providing services, connectivity, and troubleshooting various applications on back-end servers.

Texas Advanced Computing Center (TACC)   Austin, TX
Research Engineering/Scientist Professional   May 2021 - August 2021
- Machine Learning Development on HPC Systems
- Developing and deploying FanStore on Total Machine in the Texas Advanced Computing Center using Pytorch, Pytorch profiler, CUDA, and MPI. Preparing and developing ML applications for multiarchitecture HPC systems with different CPU architectures. Manage and profile ML applications, monitor performance, and build and deploy on multiple HPC systems.

Kent State University Kent, OH
Researcher at Guans Lab 2019 - Current

- Quantum Computing
- My research area includes Quantum machine learning, error correction, quantum system analysis and quantum error injection

Kent State University Kent, OH
Teaching Assistance and Grader 2016 - 2018

- Teaching Assistance and Grader
- Data Mining, Drone Programming, Computer Architecture, Structural Programming Languages, Discrete Math

Kent Display Inc. Kent, OH
Software development and Database management Summer 2018

- Automated product fault detection
- Project involved implementing ML techniques to detect and predict the fault in raw material, a website also was developed to increase the ease of inventory.

Freelancer
Software development and IT Support 2005- 2015

- IT and software development
- Over 10 years I was in charge of supporting and managing software and network infrastructure of more than 100 different companies. I was in charge of development, end point support, and security and privacy setup. I was working as an independent contractor, setting up services on Windows, Linux, and Mac OS systems.

FHBE Web Designing TH
Web Developer 2011 - 2013

- Website design
- Developed and design website in PHP, ASP .NET, and Java

Barin Elha Company TH
Network and IT consultant 2011 - 2014

- Network and IT consultant
- Managing the hardware and maintain the network for Barin Elha Company

PUBLICATIONS

[1] B. Baheri, V. Chaudhary, A. Li, S. Xu, B. Fang, and Q. Guan, "Quantum noise mitigation: Introducing the robust quantum circuit scheduler for enhanced fidelity and throughput", in *Proceedings of the 2023 International Workshop on Quantum Classical Cooperative*, ser. QCCC '23, Orlando, FL, USA: Association for Computing Machinery, 2023, pp. 21–24, ISBN: 9798400701627.

[2] E. Giusto, E. Dri, B. Montrucchio, B. Baheri, Q. Guan, D. Tiwari, and P. Rech, "Quantum computing reliability: Problems, tools, and potential solutions", in *2023 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks - Supplemental Volume (DSN-S)*, 2023, pp. 2–3.

[3] D. Oliveira, E. Giusto, B. Baheri, Q. Guan, B. Montrucchio, and P. Rech, "A systematic methodology to compute the quantum vulnerability factors for quantum circuits", *IEEE Transactions on Dependable and Secure Computing*, pp. 1–15, 2023.

[4] *Understanding the Effect of Transpilation in the Reliability of Quantum Circuits*. 2023.

[5] B. Baheri, Q. Guan, V. Chaudhary, and A. Li, "Quantum noise in the flow of time: A temporal study of the noise in quantum computers", in *2022 IEEE 28th International Symposium on On-Line Testing and Robust System Design (IOLTS)*, 2022, pp. 1–5.

[6] B. Baheri, Q. Guan, S. Xu, and V. Chaudhary, "Sqcc: Smart quantum circuit cutting", in *2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2022, pp. 614–615.

[7] B. Baheri, J. Tronge, B. Fang, A. Li, V. Chaudhary, and Q. Guan, "Mars: Malleable actor-critic reinforcement learning scheduler", in *2022 IEEE International Performance, Computing, and Communications Conference (IPCCC)*, 2022, pp. 217–226.

[8] B. Baheri, Z. Xu, V. Chaudhary, Y. Mao, B. Fang, S. Xu, and Q. Guan, "Pinpointing the system reliability degradation in nisq machines", in *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2022, pp. 646–652.

[9] D. Chen, B. Baheri, V. Chaudhary, Q. Guan, N. Xie, and S. Xu, *Approximate quantum circuit cutting*, 2022. arXiv: 2212.01270 `[quant-ph]`.

[10] D. Chen, B. Baheri, V. Chaudhary, Q. Guan, N. Xie, and S. Xu, "Approximate quantum circuit reconstruction", in *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2022, pp. 509–515.

[11] D. Oliveira, E. Giusto, E. Dri, N. Casciola, B. Baheri, Q. Guan, B. Montrucchio, and P. Rech, "Qufi: A quantum fault injector to measure the reliability of qubits and quantum circuits", in *2022 52nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2022, pp. 137–149.

[12] S. A. Stein, B. Baheri, D. Chen, Y. Mao, Q. Guan, A. Li, S. Xu, and C. Ding, "Quclassi: A hybrid deep neural network architecture based on quantum state fidelity", in *Proceedings of Machine Learning and Systems*, D. Marculescu, Y. Chi, and C. Wu, Eds., vol. 4, 2022, pp. 251–264.

[13] B. Baheri, D. Chen, B. Fang, S. A. Stein, V. Chaudhary, Y. Mao, S. Xu, A. Li, and Q. Guan, "Tqea: Temporal quantum error analysis", in *2021 51st Annual IEEE/IFIP International Conference on Dependable Systems and Networks - Supplemental Volume (DSN-S)*, 2021, pp. 65–67.

[14] S. A. Stein, R. L'Abbate, W. Mu, Y. Liu, B. Baheri, Y. Mao, G. Qiang, A. Li, and B. Fang, "A hybrid system for learning classical data in quantum states", in *2021 IEEE International Performance, Computing, and Communications Conference (IPCCC)*, 2021, pp. 1–7.

[15] S. A. Stein, B. Baheri, D. Chen, Y. Mao, Q. Guan, A. Li, B. Fang, and S. Xu, "Qugan: A quantum state fidelity based generative adversarial network", in *2021 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2021, pp. 71–81.

[16] S. A. Stein, R. M. Tischio, B. Baheri, Y. Chen, Y. Mao, Q. Guan, A. Li, and B. Fang, *Genqu: A hybrid system for learning classical data in quantum states*, 2021.

[17] B. Baheri and Q. Guan, "Mars: Multi-scalable actor-critic reinforcement learning scheduler", *Kent State University ProQuest Dissertations Publishing*, 2020.

[18] D. Chen, Y. Xu, B. Baheri, C. Bi, Y. Mao, Q. Quan, and S. Xu, "Quantum-inspired classical algorithm for principal component regression", *arXiv preprint arXiv:2010.08626*, 2020.

[19] D. Chen, Y. Xu, B. Baheri, S. A. Stein, C. Bi, Y. Mao, Q. Quan, and S. Xu, "Quantum-inspired classical algorithm for slow feature analysis", *arXiv preprint arXiv:2012.00824*, 2020.

[20] B. Baheri, S. Anaya, P. Grubel, Q. Guan, and T. Randles, "Beecwl: A cwl compliant workflow management system", 2019.

SKILLS

- **Languages:** Qiskit, Quantum Algorithm, Quantum Error Mitigation, Quantum Error Correction, Quantum Machine Learning, Quantum Cryptography, Python, C++, CUDA, Tesorflow, PyTorch, ML application, MPI, HPC, Containers, Linux, Windows, Python (General Programming and ML Pytorch / Tensorflow), C, C++, R, Java, XML, C#, HTML and DHTML, JavaScript and JQuery, RDBMS, Perl, PHP, Glassfish, MySQL,
- **Design:** Web, Java Applet, Android