AKSHAY AJAGEKAR

Systems Engineering, Cornell University
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EDUCATION

Cornell University *January 2020 - Present*

- PhD in Systems Engineering
- Project areas: Quantum computing, Reinforcement learning, Deep Learning, Optimization

Cornell University *August 2018 - January 2020*

- Master of Science (MS) in Chemical Engineering: **GPA - 3.93/4.00**
- Thesis: Quantum computing for process systems optimization and data analytics

Indian Institute of Technology (IIT), Patna *July 2014 - May 2018*

- Bachelor of Technology (B.Tech) in Chemical Science and Technology
- Cumulative **GPA - 9.24/10** with Department rank 1
- Thesis: Studying the rotational transitions of gas-phase species using a chirped pulse fourier transform microwave spectrometer

EXPERIENCE

PEESE lab at Cornell University 2018 - Present
Graduate Researcher *Ithaca, NY*

JPMorgan Chase 2021
Research Associate *New York, NY*

Nanyang Technological University 2018
Research Assistant *Singapore*

AWARDS & SKILLS

Bronze medal - National Math Olympiad 2011
Indian Institute for Studies in Mathematics *India*

Director's gold medal 2018
Indian Institute of Technology (IIT) *Patna, India*

Innovation challenge winner 2022
Avangrid Inc. *Orange, Connecticut*

Computer languages	Python, C++, R, Matlab, Bash
Machine learning libraries	PyTorch, Tensorflow, JAX, Scikit-Learn
Other	Linux, Git

PATENTS

US20220414518A1 Cornell University
Fengqi You and **Akshay Ajagekar***, Quantum computing based hybrid solution strategies for large-scale discrete-continuous optimization problems*

US20230094389A1 Cornell University
Fengqi You and **Akshay Ajagekar***, Quantum computing based deep learning for detection, diagnosis, and other applications*

Docket no. 052227.500744 JPMorgan Chase

Akshay Ajagekar, *Pierre Minssen, Romina Yalovetzky, Marco Pistoia. Systems and Methods for Quantum Computing-Assisted Portfolio Selection*

PUBLICATIONS

Exhaustive list available on Google Scholar

1. **Ajagekar, A.**, You, F, (2023). Deep reinforcement learning based unit commitment scheduling under load and wind power uncertainty. *IEEE Transactions on Sustainable Energy*, 14, p.803-812.
2. **Ajagekar, A.**, You, F., (2023). Molecular design with automated quantum computing-based deep learning and optimization. *Nature Computational Materials.*
3. Xie, J., **Ajagekar, A.**, You, F., (2023). Multi-agent attention-based deep reinforcement learning for demand response in grid-responsive buildings. *Applied Energy*, 342, p.121162.
4. **Ajagekar, A.**, Mattson, N.S. and You, F., (2023). Energy-efficient AI-based control of semi-closed greenhouses leveraging robust optimization in deep reinforcement learning. *Advances in Applied Energy*, 9, p.100119.
5. **Ajagekar, A.**, Hamoud, K.A., You, F. (2022). Hybrid classical-quantum optimization techniques for solving mixed-integer programming problems in production scheduling, *IEEE Transactions on Quantum Engineering*, 3, p.1-16.
6. **Ajagekar, A.**, You, F. (2022). Quantum computing and quantum artificial intelligence for renewable and sustainable energy: A emerging prospect towards climate neutrality, *Renewable and Sustainable Energy Reviews*, 165, p.112493.
7. **Ajagekar, A.**, You, F. (2021). Quantum computing based hybrid deep learning for fault diagnosis in electrical power systems, *Applied Energy*, 303, p.117628.
8. **Ajagekar, A.**, Humble, T., You, F. (2020). Quantum computing based hybrid solution strategies for large-scale discrete-continuous optimization problems. *Computers & Chemical Engineering*, 132, p.106630.
9. **Ajagekar, A.**, You, F. (2020). Quantum computing assisted deep learning for fault detection and diagnosis in industrial process systems. *Computers & Chemical Engineering*, 143, p.107119.
10. **Ajagekar, A.**, You, F. (2019). Quantum Computing for Energy Systems Optimization: Challenges and Opportunities. *Energy*, 179, p.76-89.
11. Bernal, D., **Ajagekar, A.**, Harwood S., et al. (2021). Perspectives of quantum computing for chemical engineering, *AIChE journal*, 68, p.e17651. ‘
12. **Ajagekar, A.**, You, F. (2022). New frontiers of quantum computing in chemical engineering, *Korean journal of Chemical Engineering*, 39, p.811820.

CONFERENCE PRESENTATIONS

AIChE Annual Meeting (2019)

IEEE International Conference On Systems, Man, and Cybernetics (2020)

International Conference On Computer-Aided Design (2021)

European Symposium on Computer Aided Process Engineering (2021)

Symposium on Dynamics and Control of Process Systems (2022)

Process Systems Engineering Symposium (2022)

IEEE American Control Conference (2022)

International Conference on Applied Energy (2022)

Applied Energy Symposium: Low Carbon Cities and Urban Energy Systems (2022, 2023)

IEEE Conference on Control Technology and Applications (2023)

TEACHING

SysEn 6800 - Computational Optimization *Fall 2022*
Responsibilities: Delivered few lectures for a class of graduate students, Held weekly recitations and office hours, Graded assignments and prelims.

SysEn 6880 - Big Data Analytics and Machine Learning *Spring 2020*
Responsibilities: Delivered few lectures for a class of graduate students, Held weekly office hours, Graded assignments.

SysEn 6888 - Deep Learning *Summer 2019, Summer 2020*
Responsibilities: Delivered few lectures for a class of graduate students, Held weekly office hours, Graded assignments and projects.

CEE 3040 - Uncertainty Analysis *Fall 2019*
Responsibilities: Delivered weekly 2 hours lectures for sections of 50 junior and senior level undergraduates, Held weekly office hours, Graded course exams.

CEE 5970 - Risk Analysis *Spring 2019*
Responsibilities: Held weekly office hours, Graded assignments and course exams.

AEP 2640 - Interfacing the Digital Domain with an Analog World *Fall 2018*
Responsibilities: Guided students through the laboratory experiments and simulations in LabView, Graded lab notebooks.