Chenxuanyin Zou

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Education

Northeastern University (985), China, Shenyang (**Recommended**) Sep. 2020 – Jul. 2023
Laboratory of Synthetical Automation for Process Industries Comprehensive Rank 1/31
M.S. in Control Theory and Control Engineering GPA: 3.67/5.0 (15%)
Supervisor: Prof. Jun Fu (ResearchGate)

Northeastern University (985), China, Shenyang Sep. 2016 – Jun. 2020
B.S. in Automation (Lang Shijun's Automation Experimental Class–the best class) GPA: 3.82/5.0 (20%)

Language Test

English - IELTS Mar. 2023 – Mar. 2025
Listening 7.0 Reading 8.0 Writing 6.5 Speaking 6.0 Overall 7.0

Research Interests

1. **Dynamic optimization of nonlinear systems**: integrate the semi-infinite programming algorithms and optimal control methods to solve the dynamic multiobjective optimization problems of nonlinear systems with path constraints. (Cases: Fed-batch bioreactor and Lysine Fermentation).
2. **Semi-infinite programming**: construct a finite-constraint upper bounding problem that can iteratively approximate the semi-infinite problem by restricting the right-hand side of the constraints. The algorithm can converge to a sub-optimal solution with rigorous satisfaction of the inequality constraints.
3. **Multiobjective optimization**: construct a directed quadratically convergent algorithm, where the subproblem is also an upper bounding problem of the a priori Newton-type multiobjective optimization method. Besides, I have further work to propose the first strategy, which can search along the Pareto front.

Publications and Current work

1. **Multiobjective dynamic optimization of nonlinear systems with path constraints.**
Jun Fu, **Chenxuanyin Zou**, Mingsheng Zhang, Xinglong Lu, and Yuzhe Li
IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2023, 53(3), 1530-1542.
DOI: 10.1109/TSMC.2022.3201685
2. **An alternated direction method for multiobjective optimization.**
Jun Fu, **Chenxuanyin Zou**

Academic Experience

Research in the Laboratory 2019 – 2023

- Integrate the heuristic algorithms and deterministic algorithms to adopt their advantages. I use the gradient-type method to converge to the local minimum because of their efficiency and the genetic algorithm (GA) to jump out of the local part through the mutation operator.
- Design two dynamic multiobjective optimization algorithms to solve the optimal control problems of nonlinear systems path constraints.
- Propose an alternated direction method for constrained multiobjective optimization problems.

MCM/ICM – *Meritorious Winner* 2018 – 2019

Aim: Design an escape plan for Louvre Museum for terrorist attacks.

- Utilize the charging and discharging process of capacitance to approximate the process of people entering and leaving the rooms, design a charged circuit according to the building structure of the Louvre Museum, then discharge it. The best escape plan is the path through which electrons move in the circuit.

Internship and Hand-on Experience in Courses 2018 – 2021

- China Baowu Steel Group Corporation Limited & SIASUN Robot & Automation CO., LTD
- Quanser experimental equipment through **Simulink** (Linear Flexible Inverted Pendulum, etc. **in** Videos)
- Control an experimental blowing machine through PLC (SIEMENS & ABB).

Academic Material Writing Experience 2021 – 2022

For supervisor

- First Prize of Natural Science Award of the Ministry of Education
- The nomination form for IEEE Fellow

Awards and Scholarships

Suzhou Industrial Park Scholarship,	Enterprise Scholarship	(1/31)	2023
First-class Scholarship,	Graduate Scholarship of NEU	(40%)×3	2021, 2022, 2023
Second-class Scholarship,	Undergraduate Scholarship of NEU	(10%)	2020
Third-class Scholarship,	Undergraduate Scholarship of NEU	(30%)×3	2017, 2018, 2019
Meritorious Winner,	MCM/ICM		2019

Related Courses

- Numerical analysis(97), Fundamental of modern control theory(95), Process control systems(95), Introduction to modern robust control(100), Optimal control(96), Modern control systems I-II (I-95, II-93), Design of computer control systems for industrial processes(92), Data-driven intelligent modeling methods(89), Linear and non-linear control systems, and Fundamental of Artificial Intelligence(87), etc.

Others

- Fabrication of welding circuit board - made a voice controlled vehicle (Altium Designer, Multsim, etc.)
- Video production - made a 3-minute introductory video (Adobe Premiere Pro)
- Driving skills - got the driver's license in 2016.