Han Feng | Curriculum Vitae

A graduate student with strong communication and quantitative skills seeking internships

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https://scholar.google.com/citations?user=A8xTWm4AAAAJ

Education

University of California, Berkeley *August 2016 - Present, Expected Dec 2021*
Ph.D. Candidate in Industrial Engineering and Operational Research
Minor in Statistics and Electrical Engineering

University of Science and Technology of China (USTC) *Sep 2012 - Jun 2016*
B.S. in Mathematics and Applied Mathematics (GPA 4.0/4.3)

Skills and Expertise

Coding: C++, Python & Cython, R, SQL, Julia, Shell, LaTeX
Modeling: regression, SVM, random forests, linear and nonlinear optimal control, dynamic programming
Algorithms: optimization, approximation algorithms, network flow and graph, spectral clustering
Tools: Vim, git, SublimeText, Matlab, Linux,

Research and Collaboration Experience

Research Assistant at Laboratory of Control, Optimization and Power *April 2017- Present*
Optimal Distributed Control Prof. Javad Lavaei

- Approximation techniques and fundamental hardness of optimal distributed control problem.
- Reduction of the number of local optimal controllers via homotopy continuation methods.
- Simulations of distributed control models in power systems with many local minimal.
- Study of the landscape of non-convex and time-varying optimization problems.

System Identification

- Study identification of linear dynamical systems with corrupted measurements.

Approximation Algorithm for Min-Plus Product with Prof. Barna Saha

- Scaling algorithms for fast computation of the min-plus product of low rank matrices.

Implementation of Gromory Cuts in CPLEX with Prof. Deepak Rajan

- Cut plane adding strategy in the branch-and-bound solver of mixed integer linear programming.

Observer Design for Lipschitz Systems with Dr. Ming Jin

- Reducing conservativeness of observer design with dissipative theory and semi-definite programming.

Research Internship at the University of Birmingham *Jul 2015- Aug 2015*
Development of real-time imaging capabilities for Diffuse Optical Imaging (DOI) of the human brain Dr. Hamid Dehghani

- Implement Python packages for the NIRFAST software and **Multi-thread Cython** interface to C code.

National Undergraduate Training Program for Innovation *Jul 2014- May 2015*
Construction of closed minimal surface with finite conical points in $\mathbb{R}^3$ Prof. Bin Xu, Prof. Xisheng Luo

- We studied global analytic functions and hypergeometric equations, their relationships with Weierstrass Representation and theories of explicit minimal surfaces.

Selected Publications

Journal

Han Feng, Javad Lavaei, "Connectivity Properties of the Set of Stabilizing Static Decentralized Controllers", to appear in SIAM Journal on Control and Optimization.

Conference Proceedings

Han Feng, Haixiang Zhang, Javad Lavaei, "A Dynamical System Perspective for Escaping Sharp Local Minima in Equality Constrained Optimization Problems", Proceedings of Conference on Decision and Control (CDC), 2020.

Han Feng, Javad Lavaei, "Escaping Locally Optimal Decentralized Control Polices via Damping, Proceedings of the American Control Conference (ACC), 2020."

Han Feng, Javad Lavaei, "On the Exponential Number of Connected Components for the Feasible Set of Optimal Decentralized Control Problem", Proceedings of the American Control Conference (ACC), 2019, **Finalist for Best Student Paper**.

Han Feng, Javad Lavaei, "A Convex Approximation of Optimal Distributed Controller in Frequency Domain", Proceedings of Conference on Decision and Control (CDC), 2018.

Preprints

Han Feng, Javad Lavaei, "Damping with Varying Regularization in Optimal Decentralized Control. Submitted for journal publication.

Han Feng, Javad Lavaei, "Analysis of the Landscape of Time-Varying Non-convex Optimization Problems via Linear Operators. Submitted for conference publication.

Ruijiang Gao, *Han Feng*, "Identify Best Fair Intervention". Submitted for conference publication.

Teaching Experience

Graduate Student Instructor

Algorithms for Data Science (IEOR 290)	UC Berkeley, *Fall 2020*
Mathematical Optimization II (IEOR 262B)	UC Berkeley, *Spring 2019*
Nonlinear and Discrete Optimization (IEOR 160)	UC Berkeley, *Fall 2017 and Fall 2018*
Mathematical Analysis (B1)	USTC, *Fall 2015*