Mahan Tajrobehkar

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Education

2018-Present **Ph.D. Student in Industrial Engineering and Operations Research**, *University of California, Berkeley, Berkeley, CA, USA.*

2013-2018 **B.Sc. in Electrical Engineering (Control Systems) and Minor in Economics**, *Sharif University of Technology, Tehran, Iran.*

Total Cumulative GPA: 19.18/20

Honors and Awards

2013 **Honorary admission for bachelor of Electrical Engineering**, *Sharif University of Technology, Tehran, Iran.*

2013 **Silver medalist at 54th International Mathematical Olympiad (IMO)**, *Santa Marta, Colombia.*

2012 **Gold medalist at 30th National Mathematics Olympiad**, *Tehran, Iran.*

2011-Present **Membership of National Elite Foundation**, *Tehran, Iran.*

2011 **Silver medalist at 29th National Mathematics Olympiad**, *Tehran, Iran.*

2010 **Bronze medalist at International Mathematics Competition (IMC) for high school students**, *Incheon, Korea.*

Research Experience

Summer 2017 **Automatic Control Laboratory, ETH Zürich, Zürich, Switzerland.**
In our work, we extended the model of charging a fleet of plug-in vehicles introduced in the article "On Aggregative and Mean Field Games with Applications to Electricity Markets" (Paccagnan, Kamgarpour, & Lygeros, 2016) by adding an uncertainty term to the model, which can be conceived of as the energy obtained from renewable energy resources, and we formulated the problem as an extensive game with perfect information, simultaneous moves, as well as chance moves. Using dynamic programming, we found the subgame perfect equilibria of the game under different assumptions.
Supervisor: Prof. Kamgarpour.

Spring 2017 **Sharif University of Technology, Tehran, Iran.**
Our goal was to find the necessary and sufficient condition(s) on the coefficients of a rational function of two variables $G(x, y)$ so that for any transfer function $H(s)$ which is positive real, $G(s, H(s))$ is also positive real. Solving this problem helps us to find the necessary condition(s) on the realizability of passive networks composed of a fractional element and some RLC components.
Supervisor: Prof. Tavazoei.

Research Experience (Continued)

Fall 2016 **Sharif University of Technology, Tehran, Iran.**

In the article "Maximum Number of Frequencies in Oscillations Generated by Fractional Order LTI Systems" (Tavazoei, Haeri, Siami, & Bolouki, 2010), the authors derive an upper bound as well as a lower bound for the maximum number of frequencies in oscillations generated by fractional order LTI systems. We improved the bounds provided in this paper when the inner dimension of the system was equal to two.

Supervisor: Prof. Tavazoei.

Teaching Experience

Teaching Assistant of Probability and Statistics, Numerical Calculation, Analog Circuits, Linear Control Systems, Principles of Electronics, Microeconomics, Macroeconomics, and Principles of Economics in **Sharif University of Technology**.

Teaching math olympiad (Geometry) to Iran's IMO team and at the best high schools of Tehran.

Fields of Interest

- **Control Theory**
- **Convex Optimization**
- **Stochastic Control**
- **Game Theory**
- **Financial Economics**