

Current Affiliation

- Herman Goldstine Memorial Postdoctoral Fellow** Westchester County, NJ
IBM Thomas J. Watson Research Center September 2020 - Present
 (The Goldstine Fellowship is awarded annually to at most two candidates in all areas of mathematical and computer sciences.)

Education

- Princeton University** Princeton, NJ
Ph.D., Operations Research and Financial Engineering September 2015 - August 2020
 – **Thesis:** Semidefinite Representations in Semialgebraic Optimization and Dynamics-Oriented Learning
- Ecole Polytechnique** Paris, France
B.S. and M.S. in Applied Mathematics and Computer Science September 2012 - August 2015

Publications

- Machine Learning and Automated Reasoning for Theory Discovery** (Joint work with C. Cornelio, S. Dash, ...). Submitted.
- Piecewise-Linear Motion Planning amidst Static, Moving, or Morphing Obstacles** (Joint work with Jean-Bernard Lasserre and Vikas Sindhvani). International Conference on Robotics and Automation, 2021.
- On Sum of Squares Representation of Convex Forms and Generalized Cauchy-Schwarz Inequalities.** SIAM Journal on Applied Algebra and Geometry, 4(2), 377400, 2020.
- Learning Dynamical Systems with Side Information** (joint work with A. Ahmadi). Proceedings of Machine Learning Research vol 120:110, 2020.
- Time-Varying Semidefinite Programs** (joint work with A. Ahmadi). Mathematics of Operations Research, 2020.
- On Algebraic Proofs of Stability for Homogeneous Vector Fields** (joint work with A. Ahmadi). IEEE Transactions on Automatic Control 65.1 : 325-332, 2019.
- Teleoperator Imitation with Continuous-time Safety** (joint work with J. Varley and V. Sindhvani). In the Proceedings of the Robotics: Science and Systems (RSS), 2019.
- A Globally Asymptotically Stable Polynomial Vector Field with Rational Coefficients and no Local Polynomial Lyapunov Function** (joint work with A. Ahmadi). Systems & Control Letters 121: 50-53 2018.

Selected Talks

- Algebra and Geometry of Polynomials: Theory and Applications
 - Keynote Speaker at the Canadian Undergraduate Mathematics Conference Queens University, Canada 2019.
- On Sum of Squares Representation of Convex Forms and Generalized Cauchy-Schwarz Inequalities
 - Oberwolfach Research Institute for Mathematics Oberwolfach, Germany 2020
 - Laboratory for Information & Decision Systems MIT, MA 2020
 - “Geometry of Real Polynomials, Convexity and Optimization” Workshop Banff, Canada 2019
- Learning Dynamical Systems with Side Information
 - Learning for Dynamics & Control Berkeley, CA 2020.
- Time-Varying Semidefinite Programs
 - Internal MURI Workshop Austing, TX 2019
 - MOPTA Bethlehem, PA 2019
 - ISMP Bordeaux, France 2018
 - AFOSR, Dynamics and Control Program Review Arlington, VA 2018
 - INFORMS Annual Meeting Houston, TX 2017
 - SIAM Pittsburgh, PA 2017
- Algebraic Proofs of Stability: Review and Converse Results
 - Multidisciplinary Optimization Seminar Toulouse, France 2019
 - SIAM DS19 Snowbird, UT 2019
 - “Optimal Power Flow Problem and Stability Assessment of Power Systems” workshop Paris, France 2018

Awards

- IBM Herman Goldstine Postdoctoral Fellowship in Mathematical Sciences (2020-2021)
- Honorable mention in the 2019 INFORMS Optimization Society Student Paper Prize Competition
- Best Poster Award of the Princeton Day of Optimization (2018)
- French Governments Major-Excellence Scholarship (2012)

Industry Experience

- **Google** New York, NY
Google Brain Team - Intern *June 2018 - September 2018*
 - Developed a framework for imitation learning with stability guarantees
- **Susquehanna International Group** Philadelphia, PA
Quant. Research - Intern *June 2016 - August 2016*
 - Collaborated with the Options Team to automate corrections to short term volatility predictions
- **JPMorgan** London, UK
Quant. Research - Intern *Mars 2015 - August 2015*
 - Improved the accuracy of the Exotic Rates pricing system
 - Reduced the risk analysis software process time by a factor of **2.5**
- **Infosys** Hyderabad, India
Software Engineer - Intern *June 2014 - August 2014*
 - Developed a web security scanner that analyzes the content (DOM elements) of a web page and monitors HTTP traffic to enhance the security against XSS and CSRF attacks

Professional Activities

- Program committee for the 3rd Conference on Learning for Dynamics and Control** ETH Zurich, 2021
- Reviewer for Operations Research and Mathematical Programming journals**
- Session Organizer** INFORMS 2019
- Volunteer Math Expert in the Julia Robinson Math Festival** Princeton University 2018
- Volunteer in the Princeton Day of Optimization**
- Assistant in Instruction** Princeton University
- Graduate level course in Advanced Optimization Spring 2017
 - Sophomore level course in Fundamentals of Statistics Spring 2016
 - Junior level course in Computing and Optimization for the Physical and Social Sciences Fall 2016 & 2017

Skills

Programming: Python, C++, Matlab, Julia

Languages: English (Highly proficient), French (Bilingual), Arabic (Bilingual)

Extracurricular Activities:

- Head of IT staff of X-Projets (Junior enterprise of Ecole Polytechnique)
- Attended London Model United Nations conference and acted as a delegate from Turkey: Collaborated with a working group to create a comprehensive paper on Middle East crisis