Masih Haseli

Curriculum Vitae

Mechanical & Aerospace Engineering Department
University of California, San Diego

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Research

- Dynamical Systems and Control Theory
- Operator Theoretic Approaches in Dynamical Systems
- Machine Learning
- Network Systems and Distributed Computing

Employment

Postdoctoral Scholar — Sep. 2022 - present
Department of Mechanical and Aerospace Engineering
University of California, San Diego
Advisor: Prof. Jorge Cortés

Education

Ph.D. in Engineering Sciences (Mechanical Engineering) — Sep. 2017 - Aug. 2022
University of California, San Diego
Advisor: Prof. Jorge Cortés

M.Sc. in Electrical Engineering – Control — Sep. 2013 - Oct. 2015
Amirkabir University of Technology, Tehran
Advisor: Prof. Ali Doustmohammadi

B.Sc. in Electrical Engineering – Control — Sep. 2009 - Sep. 2013
Amirkabir University of Technology, Tehran
Advisor: Prof. Ali Doustmohammadi

Honors & Awards

- Robert Skelton Systems and Control Dissertation Award — 2023
  UCSD Center for Control Systems and Dynamics
- Best Student Paper Award — 2021
  The 2021 American Control Conference, New Orleans, Louisiana
- Bronze Medal — 2014
  Iran's National Mathematics Competition
- Silver Medal — 2008
  Iran's National Physics Olympiad

Publications

Journal Articles

(J1) Modeling nonlinear control systems via Koopman control family: universal forms and subspace invariance proximity
M. Haseli, J. Cortés
IEEE Transactions on Automatic Control, *submitted*

(J2) Invariance proximity: closed-form error bounds for finite-dimensional Koopman-based models
M. Haseli, J. Cortés
IEEE Control Systems Letters, *submitted*

(J3) Generalizing dynamic mode decomposition: balancing accuracy and expressiveness in Koopman approximations
M. Haseli, J. Cortés
Automatica 153 (2023), 111001

(J4) Temporal forward-backward consistency, not residual error, measures the prediction accuracy of extended dynamic mode decomposition
M. Haseli, J. Cortés
IEEE Control Systems Letters 7 (2023), 649-654

(J5) Parallel learning of Koopman eigenfunctions and invariant subspaces for accurate long-term prediction
M. Haseli, J. Cortés
IEEE Transactions on Control of Network Systems 8 (4) (2021), 1833-18458

(J6) Learning Koopman eigenfunctions and invariant subspaces from data: Symmetric Subspace Decomposition
M. Haseli, J. Cortés
IEEE Transactions on Automatic Control 67 (7) (2022), 3442-3457

Conference Proceedings

(C1) Temporal forward-backward consistency, not residual error, measures the prediction accuracy of extended dynamic mode decomposition
M. Haseli, J. Cortés
Proceedings of the American Control Conference, San Diego, 2023

(C2) Data-driven approximation of Koopman-invariant subspaces with tunable accuracy
M. Haseli, J. Cortés
Proceedings of the American Control Conference, New Orleans, Louisiana, 2021, pp. 469-474
Best Student Paper Award Winner

(C3) Fast identification of Koopman-invariant subspaces: parallel symmetric subspace decomposition
M. Haseli, J. Cortés
Proceedings of the American Control Conference, Denver, Colorado, 2020, pp. 4545-4550

(C4) Efficient identification of linear evolutions in nonlinear vector fields: Koopman invariant subspaces
M. Haseli, J. Cortés
Proceedings of the IEEE Conference on Decision and Control, Nice, France, 2019, pp. 1746-1751

(C5) Approximating the Koopman operator using noisy data: noise-resilient extended dynamic mode decomposition
M. Haseli, J. Cortés
Proceedings of the American Control Conference, Philadelphia, PA, 2019, pp. 5499-5504

Teaching Experience

- Nonlinear Control (UCSD MAE 281B) — Spring 2021
  Graduate Teaching Assistant
  Instructor: Prof. Jorge Cortés

Invited Talks

- Scalable Optimization and Control Lab Seminars — Sep. 2023
  Department of Electrical and Computer Engineering, University of California, San Diego
- 2022 International Symposium on Nonlinear Theory and Its Applications — Dec. 2022
- *Data-Driven Reduced-Order Methods for System Control Minisymposium* — Sep. 2021
  Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology Conference
- 37th Southern California Control Workshop, University of California, San Diego — Jan. 2020

Professional Service

- **Reviewer for:**
  - Automatica
  - IEEE Access
  - IEEE Control Systems Letters
  - American Control Conference
  - IFAC World Congress
  - IEEE Open Journal of Control Systems
  - IEEE Conference on Decision and Control
  - Resilience Week Symposium
  - Indian Control Conference
  - International Symposium on Mathematical Theory of Networks and Systems (MTNS)
- **Member of Societies:** IEEE, IEEE Control Systems Society