Yang Wang

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Work experience

Assistant Professor, School of Information Science and Technology, ShanghaiTech, 2020-present

Visiting Scholar, Ohio State University, U.S.A, Winter 2017, Winter 2018

Visiting Scholar, Cambridge University, UK, Winter 2014

Research Interest

Theoretical topics: Adaptive Control; Nonlinear Control; Output Regulation; Multi-Agent System (MAS) control; Iterative Learning Control

Application topics: Active noise cancellation; Active vibration control; Manipulator control;

Education

Ph.D. in Engineering , Imperial College London, UK 01/2015-06/2019

Master Degree in Control Systems, Imperial College London, UK 09/2013-09/2014

Bachelor Degree in Automation, Tongji University, Shanghai, China 09/2009-07/2013

Funded Projects

- Yangfan project, “Multiple-model-based Adaptive Feedforward Controller Design", Shanghai Science and Technology Committee China, 2021-2024.

- Institutional grants, Shanghaitech University, 2020-present

Conference Session Chair & Talk Host

- Co-Chair of the session on Robust Adaptive Control, 59th IEEE Conference on Decision and Control, Florida, USA, December, 2020
- Host of talk on “Multigrid Methods for Computing Low-Rank Solutions to Parameter-Dependent Partial Differential Equations”,Distinguished Lecture Series, ShanghaiTech, 2022

Technical Reviewer

Automatica; IEEE Transactions on control systems technology ;SIAM Journal on Optimization (SIOPT) SIAM Journal on Control and Optimization, International Journal of Control

Selected international control conferences: CDC, ECC, ACC, IFAC World Congress.

Teaching

- Introduction to Control (Fall 2020, Fall 2021, and Fall 2022.)
- Adaptive Control (Spring 2020, Spring 2021, and Spring 2022.)

Dr. Wang teaches the undergraduate course *Introduction to Control* and one major graduate
courses, named *Adaptive Control*, which has been developed from scratch at ShanghaiTech University.

Publications

Journal Paper

1. Y. Wang, G.Pin, A.Serrani*, T.Parisini, “Switching-based Adaptive Feedforward Control of Uncertain Linear Systems with Unknown Multi-sinusoidal Disturbances”, regular paper, *Automatica*, under review.
2. Y. Wang, J. Yao*, W.Zhang, ”The Evolutionary Fairness Dynamics on Multiplex Networks with Information Reliability and Time Delays”, brief paper, *IEEE Trans on Control of Network Systems,* under review.

3. Y. Wang, G. Pin, A. Serrani and T. Parisini, "Removing SPR-Like Conditions in Adaptive Feedforward Control of Uncertain Systems," in IEEE Transactions on Automatic Control, vol. 65, no. 6, pp. 2309-2324, June 2020, doi: 10.1109/TAC.2019.2934394.
4. Y. Wang, J. Yao, G. Chen, “An evolving super-network model with inter-vehicle communications” , *Journal of the Franklin Institute,* 2018, doi.org/10.1016/j.jfranklin.2018.07.036
5. G. Pin, Y. Wang, B. Chen, T. Parisini, “Identification of multi-sinusoidal signals with direct frequency estimation: An adaptive observer approach”, Automatica, Volume 99, 2019, pp. 338-345, doi.org/10.1016/j.automatica.2018.10.026

Conference Paper

1. G. Pin, Y. Wang, B. Chen and T. Parisini, "Semi-global direct estimation of multiple frequencies with an adaptive observer having minimal parameterization," 2015 54th IEEE Conference on Decision and Control (CDC), 2015, pp. 3693-3698, doi: 10.1109/CDC.2015.7402792.
2. Y. Wang, G. Pin, A. Serrani and T. Parisini, "Removing SPR-like conditions in Adaptive Feedforward Control of uncertain systems," 2016 IEEE 55th Conference on Decision and Control (CDC), 2016, pp. 4728-4733, doi: 10.1109/CDC.2016.7798990.
3. Y. Wang, B.Chen, G.Pin, T.Parisini, “Estimation of a Damped Sinusoid: an Observer-Based Approach” , 20th World Congress of the International Federation of Automatic Control (IFAC), Toulouse, France, July, 2017. https://doi.org/10.1016/j.ifacol.2017.08.486.
4. Y. Wang, G. Pin, A. Serrani and T. Parisini, "Switching-based Sinusoidal Disturbance Rejection for Uncertain Stable Linear Systems," 2018 Annual American Control Conference (ACC), 2018, pp. 4502-4507, doi: 10.23919/ACC.2018.8431832.
5. Y. Wang, G. Pin, A. Serrani, and T. Parisini, “Switching-based regulation of uncertain stable linear systems affected by an unknown harmonic disturbance, IFAC-PapersOnLine, Volume 52, Issue 16, 2019, Pages 604-609, doi.org/10.1016/j.ifacol.2019.12.028
6. Y. Wang, G. Pin, A. Serrani and T. Parisini, "Switching-based Rejection of an Unknown Harmonic Disturbance in Uncertain Stable Linear Systems under Measurement Noise," 2019 American Control Conference (ACC), 2019, pp. 3020-3025, doi: 10.23919/ACC.2019.8815279.

7. Y. Wang, G. Pin, A. Serrani and T. Parisini, "Switching-based Rejection of Multi-sinusoidal Disturbance in Uncertain Stable Linear Systems under Measurement Noise," 2019 IEEE 58th Conference on Decision and Control (CDC), 2019, pp. 6112-6117, doi: 10.1109/CDC40024.2019.9029441.
8. G. Pin, Y. Wang, A. Serrani and T. Parisini, "Dynamic Certainty Equivalence Adaptive Control by Nonlinear Parameter Filtering," 2020 59th IEEE Conference on Decision and Control (CDC), 2020, pp. 1454-1459, doi: 10.1109/CDC42340.2020.9304426.
9. H. Zhang and Y. Wang*, "Adaptive neural network control of an uncertain robotic manipulator with input constraint and external disturbance," 2021 IEEE 10th Data Driven Control and Learning Systems Conference (DDCLS), 2021, pp. 1302-1308, doi:10.1109/DDCLS52934.2021.9455611.
10. G.He, Y. Wang*, G. Pin, A. Serrani, T. Parisini,''Switching-based Adaptive Output Regulation for Uncertain Systems Affected by a Periodic Disturbance'' 2022, American Control Conference (ACC), Atlanta, USA, in press.
11. G. Pin, Y. Wang, A. Serrani*, “Direct-Adaptive Control of Relative-Degree-Two Systems with Certifiable Derivative Error Bound”, 2022 Conference on Control Technology and Applications(CCTA), Terieste, Italy, in press.
12. G. Pin, Y. Wang, A. Serrani*, “Parameter-dependent Input Normalization: Direct-Adaptive control with Uncertain Control Direction”, accepted for presentation at the 2022 IEEE 61st Conference on Decision and Control (CDC).
13. Y. Wang, Y. Gong, G. Pin, F. Zhu, A. Serrani, T. Parisini, “Unknown Input Observer-Based Output Regulation for Uncertain Minimum Phase Linear Systems Affected by a Periodic Disturbance”, accepted for presentation at the 2022 IEEE 61st Conference on Decision and Control (CDC).
14. Y.Gong, Y. Wang, “Unknown Input Observer-based Finite-time Frequency Estimator for a Biased Multi-sinusoidal Signal”, accepted for presentation at the 2022 CAC.
15. B. Heng, Y. Wang, “Modular Design of Combined Integrating Controller Based On OPTO22”,accepted for presentation at the 2022 CAC.

Patent