Prof. Dr. Andrea Iannelli

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Brief biography

Andrea Iannelli is a tenure-track junior professor in the Institute for Systems Theory and Automatic Control at the University of Stuttgart. He is also a member of the Cluster of Excellence "Data-Integrated Simulation Science (SimTech)" and a faculty member of the International Max Planck Research School for Intelligent Systems (IMPRS-IS).
He completed the Bachelor and Master degrees in Aerospace Engineering at the University of Pisa (Italy). During the master studies, he was a visiting researcher at San Diego State University (US), where he worked on fluid-structure interaction solvers for nonlinear analysis of unconventional aircraft configurations. In April 2019 he completed his PhD at the University of Bristol (UK), funded by the H2020 project FLEXOP. During his PhD, Andrea focused on the reconciliation between robust control theory (Linear Fractional Transformation, structured singular value, Integral Quadratic Constraints, Dissipativity) and dynamical systems approaches (bifurcation theory, numerical continuation), with application to the study of dynamic instabilities in uncertain aerospace systems. From May 2019 to September 2022 he was a PostDoctoral researcher in the Automatic Control Laboratory (IfA) at ETH Zürich. During his PostDoc he has been developing and demonstrating theoretical advances in data-driven control theory, optimization-based control, and system identification, with particular emphasis on the use of data to make reliable predictions and decisions.

Research interests

His research interests are on principled techniques for modelling, analysis, and control of uncertain linear and nonlinear dynamical systems. Andrea pursues research on both model- and data-based approaches, and believes that reconciling these two viewpoints and leveraging the respective strengths is key to achieve safety and reduce conservatism for trustworthy autonomous operation of complex systems. Basic research interests include: data-driven control theory; uncertainty quantification; optimization; robust control; system identification; dynamical systems theory. His research has impact on the development of intelligent systems for a sustainable society, especially in the fields of energy and transportation systems and industry 4.0: e.g. industrial automation, robotics, automotive, manufacturing, energy management. The overarching goal of his research is to foster trustworthy autonomy by contributing to progress on the design of intelligent systems for a sustainable society, especially in the fields of energy and transportation systems and industry 4.0: e.g. sustainable aerospace systems, smart cities, intelligent transportation, smart cities, robotics, automotive, manufacturing. More information on his research can be found on his personal webpage.