Nana Wang

Ph.D. Candidate in Automatic Control
KTH Royal Institute of Technology, Sweden
Email: nanaw@kth.se
Google Scholar Personal website



Research Interests

Learning and identification of dynamical systems; networked and multi-agent systems; topology identification; learning and control of large-scale dynamical systems; biological networked systems

Research Experience

Ph.D. Candidate in Automatic Control 2022.07 – Present
KTH Royal Institute of Technology, Stockholm, Sweden
Supervisor: Prof. Dimos V. Dimarogonas

- Develop topology-identification methods for networked dynamical systems under partial excitation, with emphasis on recovering unknown weighted interconnection structures.
- Study topology identification and switching-time detection for time-varying networks under measurement noise.
- Establish identifiability conditions and estimation methods for heterogeneous networked systems under measurement and process noise.
- Develop scalable identification methods for large-scale networks and topology-estimation methods for open multi-agent systems with fast switching and short observation intervals.
- Investigate topology-estimation methods for deciphering communication structures among immune-cell populations

Visiting Researcher 2026.10 – 2026.12
UCLouvain, Louvain-la-Neuve, Belgium
Host: Prof. Julien M. Hendrickx ICTEAM – Institute of Information and Communication Technologies Electronics and Applied Mathematics

- From Local to Global Identifiability of Dynamic Networks: Computing and Reducing the Identifiability Degree

Education

2022.07 – 2027.02(Expected) **Ph.D. in Automatic Control**
KTH Royal Institute of Technology, Sweden
Supervisor: Prof. Dimos V. Dimarogonas

2022.07 – 2027.02(Expected) **WASP AI PhD Program**
Wallenberg AI, Autonomous Systems and Software Program (WASP)
Coursework: Machine Learning; Bayesian Inference and Graphical Models; Probability and Random Processes; Optimization; Topological Data Analysis

08/2019 – 01/2022 **M.Phil. in Control Theory and Engineering**
Beihang University, China

09/2015 – 06/2019 **B.Eng. in Detection, Guidance and Control Technology**
Northwestern Polytechnical University, China

Publications

Journal Publications & Manuscripts

J1. **Nana Wang**, Yushan Li, Dimos V. Dimarogonas. *Scalable Topology Identification of Large-Scale Directed Networks Under Partial Excitation.* Under review at IEEE TAC.

J2. **Nana Wang**, Dimos V. Dimarogonas. *Direct and Filter-Based Topology Estimation for Dynamical Networks Under Partial Excitation.* Under review at Automatica.

J3. **Nana Wang**, Dimos V. Dimarogonas. *Network Identification for Multi-Agent Dynamical Systems under Time-Varying Topologies.* Under review at IEEE TCNS.

J4. Restrepo Esteban, **Nana Wang**, and Dimos V. Dimarogonas. *Simultaneous topology identification and synchronization of directed dynamical networks.* IEEE Transactions on Control of Network Systems 11.3 (2023): 1491-1501.

J5. Rikard Forlin, Pouria Tajvar, **Nana Wang**, Dimos Dimarogonas, Petter Brodin. *Cluster-free annotation of single cells using Earth mover's distance-based classification.* bioRxiv (2024): 2024-03.

Conference Publications

C1. **Nana Wang**, Pelin Sekercioglu, Dimos V. Dimarogonas. *Topology Estimation for Open Multi-Agent Systems.* IFAC 2026. (Accepted)

C2. Pelin Sekercioglu, **Nana Wang**, Angela Fontan, Dimos V. Dimarogonas. *Topology Identification of Dynamical Signed Graphs.* ECC 2026, (Accepted)

C3. **Nana Wang**, and Dimos V. Dimarogonas. *Leader selection and control design for topology estimation of dynamical networks.* 2025 IEEE 64th Conference on Decision and Control (CDC). IEEE, 2025.

C4. **Nana Wang**, Esteban Restrepo, and Dimos V. Dimarogonas. *Simultaneous Topology Estimation and Synchronization of Dynamical Networks with Time-varying Topology.* 2024 IEEE 63rd Conference on Decision and Control (CDC). IEEE, 2024.

C5. **Nana Wang**, and Dimos V. Dimarogonas. *Finite-time topology identification for complex dynamical networks.* 2023 62nd IEEE Conference on Decision and Control (CDC). IEEE, 2023.

C6. Restrepo Esteban, **Nana Wang**, and Dimos V. Dimarogonas. *Simultaneous synchronization and topology identification of complex dynamical networks.* 2023 62nd IEEE Conference on Decision and Control (CDC). IEEE, 2023.

Selected Publications Prior to Ph.D.

M1. **Nana Wang**, and Fei Hao. *Event-triggered sliding mode control with adaptive neural networks for uncertain nonlinear systems.* Neurocomputing 436 (2021): 184-197.

M2. **Nana Wang**, and Fei Hao. *Event-based adaptive sliding mode control for Euler–Lagrange systems with parameter uncertainties and external disturbances.* International Journal of Robust and Nonlinear Control 32.9 (2022): 5420-5435.

Academic Service

- **Journal Reviewer:** *IEEE Transactions on Automatic Control*; *IEEE Transactions on Control of Network Systems*; *IEEE Transactions on Signal and Information Processing over Networks.*
- **Conference Reviewer:** *IEEE Conference on Decision and Control*; *American Control Conference*; *IFAC World Congress*; *European Control Conference.*

Technical Skills

- Programming: Python, MATLAB, LaTeX, Git

Supervision & Teaching

- **Master's Thesis Supervisor**, *Nonlinear Topology Identification Based on Koopman Theory.*
- **Teaching Assistant**, Control Engineering, KTH Royal Institute of Technology, Autumn 2023 and Autumn 2024.
- **Teaching Assistant**, Hybrid and Embedded Control Systems, KTH Royal Institute of Technology, Spring 2025, Spring 2026.

Awards and Honors

- Travel Scholarship from the Karl Engver's foundation
- National Scholarship for Postgraduates (BUAA)
- First-class Academic Scholarship (BUAA)
- Outstanding Graduate (BUAA)