

Washington State University School of EECS Systems Engineering Research Group

Control, communications and signal processing: control of multi-agent systems, non-linear systems, non-linear control, adaptive control; wireless communications for 5G, nextG, on-chip and underwater channels; machine-learning-based signal processing; turbo-equalization and coding for magnetic and optical disk storage; statistical estimation and detection, graphical modeling and inference, data mining; distributed optimization, communication-efficient distributed learning, federated learning; joint source-channel coding, data compression.

Faculty:

- Ali Saberi, Professor, IEEE Fellow, IFAC Fellow, https://scholar.google.com/citations?user=xcV_89kAAAAJ
- Thomas Fischer, Professor Emeritus, IEEE Fellow
- Benjamin Belzer, Associate Professor, <https://scholar.google.com/citations?hl=en&user=3uEJQmQAAAAJ>
- Krishna Sivakumar, Associate Professor, <https://scholar.google.com/citations?hl=en&user=bEic8SsAAAAJ>
- Mohammad Torabi, Associate Professor, <https://scholar.google.com/citations?hl=en&user=4pmq3ZwAAAAJ>
- Xuanyu Cao, Assistant Professor (Jan. 2025), <https://scholar.google.com/citations?user=jvrZYmAAAAAJ&hl=en>.

Systems faculty have many research collaborators outside of WSU. For details, see the above Google scholar pages.

Number of graduated Ph.D. students advised by systems group faculty since 1991: 28

Graduate student placement after graduation:

Faculty positions: U. of Virginia, Stony Brook U., U. of Texas Arlington, U. of Maryland (School of Medicine), Gonzaga U., U. of North Texas, National U. of Singapore, Chinese U. of Hong Kong, Shanghai Jiao Tong U., China, Northeastern U., China, Technical U. of Malaysia, Kasetsart U., Thailand, Bangkok U., Thailand

Post-doc positions: U. of Pennsylvania, U. of Washington, U. C. Santa Barbara, KTH Royal Institute of Tech., Sweden

Industry and national laboratory positions: Pacific Northwest National Laboratory (PNNL), Apple, Meta, Qualcomm, Broadcom, Intel, ASML, Marvell, Western Digital

Graduate student journal publication venues: IEEE Trans. Automatic Control; IEEE Trans. Control of Network Syst.; Automatica; Int. Jour. Robust and Nonlin. Control; Proc. Royal Society A: Math., Phys. Syst. & Control Lett.; SIAM Jour. on Control and Opt. and Eng. Sci.; IEEE Trans. Commun.; IEEE Trans. Sig. Proc.; IEEE Jour. on Sel. Areas in Commun.; Applied Physics Lett.; Knowledge and Info. Syst.; IEEE Trans Image Proc.; IEEE Trans. Magnetics

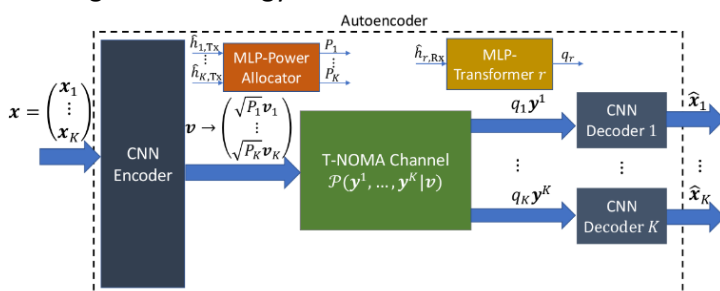
Number of archival journal papers co-authored with graduate students (including post-graduation): 147

Number of Google Scholar citations to journal or conference papers co-authored with graduate students: 8873

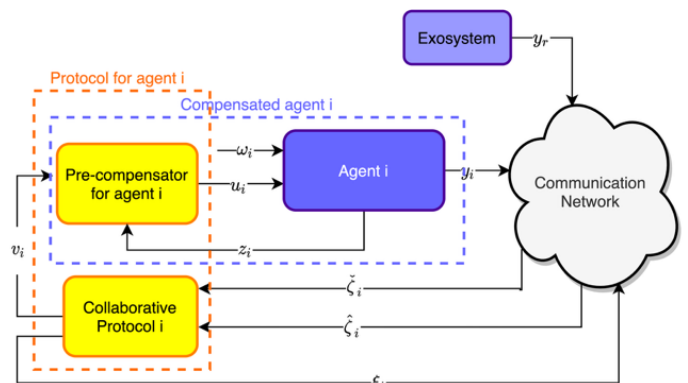
Graduate student awards:

Best paper awards: 2003 IEEE Int. Conf. on Data mining (ICDM); 2012 IEEE ICDM 10-Year Highest-Impact Paper Award.
WSU awards: Grad. and Prof. Students Outstanding Grad. Student Award, EECS Outstanding Teaching Assistant Award.

Funding agencies: National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Department of Defense (Army), Office of Naval Research (ONR), Advanced Storage Research Consortium, and Washington Technology Center.



Convolutional neural network (CNN) autoencoder for downlink K-user time-offset non-orthogonal multiple access (T-NOMA) with faster-than-Nyquist (FTN) signaling over wireless channels. T-NOMA has been proposed for next generation (6G) cellular communication standards.



Cooperative control of multi-agent systems – A scale-free protocol design.