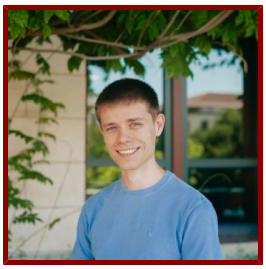
Stanford



Robert Lupoiu

Ph.D. Student in Electrical Engineering, admitted Autumn 2021

Bio

BIO

Robert is a PhD candidate in Electrical Engineering, co-advised by Jonathan Fan and Ivan Soltesz. His research is generously supported by the Knight-Hennessy Scholars program.

Robert's work has been focused on pushing the boundaries of optical engineering and neuroscience through innovations in machine learning and applied physics. Most recently, he developed agentic reasoning frameworks that leverage a new class of ultra-fast and general Maxwell surrogate solvers to power the automated design of multi-objective, multi-wavelength metasurfaces in near real-time (as opposed to weeks of manual specialized design work).

PROGRAM AFFILIATIONS

- Knight-Hennessy Scholars

LINKS

- https://robertlupoiu.com: https://robertlupoiu.com

Publications

PUBLICATIONS

- **Conformal Aberration-Correcting Spaceplates** *LASER & PHOTONICS REVIEWS*
  Shao, Y., Wang, Z., Dai, T., Lupoiu, R., Kim, Y., Milster, T. D., Fan, J. A.
  2026
- **A multi-agentic framework for real-time, autonomous freeform metasurface design.** *Science advances*
  Lupoiu, R., Shao, Y., Dai, T., Mao, C., Edée, K., Fan, J. A.
  2025; 11 (44): eadx8006
- **Multifunctional Spaceplates for Optical Aberration Correction** *ACS PHOTONICS*
  Shao, Y., Lupoiu, R., Jiang, J., Zhou, Y., Milster, T. D., Fan, J. A.
  2024
- **Atomically Precise Manufacturing of Silicon Electronics.** *ACS nano*
  Pitters, J., Croshaw, J., Achal, R., Livadaru, L., Ng, S., Lupoiu, R., Chutora, T., Huff, T., Walus, K., Wolkow, R. A.
  2024
- **High Speed Simulation and Freeform Optimization of Nanophotonic Devices with Physics-Augmented Deep Learning** *ACS PHOTONICS*
  Chen, M., Lupoiu, R., Mao, C., Huang, D., Jiang, J., Lalanne, P., Fan, J. A.

2022

- **WaveY-Net: Physics-Augmented Deep Learning for High-Speed Electromagnetic Simulation and Optimization**
  Chen, M., Lupoiu, R., Mao, C., Huang, D., Jiang, J., Lalanne, P., Fan, J. A.
  edited by Chang-Hasnain, C. J., Fan, J. A., Zhou, W.
  SPIE-INT SOC OPTICAL ENGINEERING.2022

- **MetaNet: a new paradigm for data sharing in photonics research** *OPTICS EXPRESS*
  Jiang, J., Lupoiu, R., Wang, E. W., Sell, D., Hugonin, J., Lalanne, P., Fan, J. A.
  2020; 28 (9): 13670–81

- **SiQAD: A Design and Simulation Tool for Atomic Silicon Quantum Dot Circuits** *IEEE TRANSACTIONS ON NANOTECHNOLOGY*
  Ng, S., Retallick, J., Chiu, H., Lupoiu, R., Livadaru, L., Huff, T., Rashidi, M., Vine, W., Dienel, T., Wolkow, R. A., Walus, K.
  2020; 19: 137-146