Kateryna Pistunova

Ph.D. candidate in Physics,
Ph.D. minor in CS
Stanford University
Tony Heinz Research Group

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GS A complete list of publications, presentations, and other works is available at my Google Scholar

Programming

- Python (research data analysis)
- PyTorch, TensorFlow (coursework)
- Matlab (research data analysis)
- Lumerical, COMSOL
- LabView

Research Facts

- 704 citations
- 5 h-index
- 5 co-authored articles, 2 preprints
- >15 conference presentations

Technical Skills

Developing, constructing and using optical characterization setups:

- Photo-luminescence, absorption and Raman spectroscopies
- Second-harmonic generation
- Time-dependent PL spectroscopy with single photon detectors

Measurements and nano device characterization:

- Optical and electrical measurements under helium and dilution fridge temperature and magnetic field
- Ultra high magnetic field measurements (up to 32T)
- High vacuum systems

Cleanrooom and nano-fabrication:

- Optical and e-beam lithography
- PVD, ALD
- RIE, FIB, AFM, PFM, XPS

About Me

- Ph.D. candidate in Physics with a minor in Computer Science, with a strong background in optics, light-matter interaction, nano-device fabrication and characterization, data analysis
- Strong interest in AI, Machine Learning and their connection to Physics, with a proven track record of successful projects and completed coursework

Education

2018 – Current — Ph.D. in Physics, Ph.D. minor in CS, **Stanford University** — Stanford, CA - USA

2015 – 2018 — B.A. in Physics, **Harvard University** — Cambridge, MA - USA

Experience

7.2021 – 9.2021 — **Hardware Technology PhD Intern**, Apple — Cupertino, CA - USA

• Developed and evaluated the market viability of next-generation thin film display technologies with novel chemistry

2018 – current — **Ph.D. research assistant**, Tony Heinz group, Stanford University — Stanford, CA - USA

• Discovered a new quasi-particle by fabricating a novel nano-device, expanding the field of nano engineering

2015 – 2018 — **Undergraduate research assistant**, Philip Kim group, Harvard University — Cambridge, MA - USA

• Achieved full opto-electrical control of promising novel information carriers with potential applications in quantum computing

Coursework and Projects

Deep Learning CS230 — **Challenges in Scalable Distributed Training of Deep Neural Networks under communication constraints** link

• Developed a Subsampled Decentralized Stochastic Gradient (SDSG) algorithm to reduce communication demand in distributed training of neural networks

• In SDSG a node randomly subsamples a vector and projects it onto a lower dimensional subspace before communicating with other nodes, thereby reducing communication demands

• Selected as Outstanding Project

Computer Vision CS231A — **Investigating Voxel Carving for 3D Reconstruction of Occluded Objects in a Cluttered Container** link

• Improved object recognition by applying voxel carving to synthetically generated 3D objects.

Other relevant courses: Machine Learning, Introduction to Robotics, Data-Driven Impact, Venture Creation for the Real Economy

Extracurricular

VP Outreach at Ukrainian Student Association at Stanford

- Coordinated humanitarian missions delivering >32 tons of medical supplies
- Raised >$2M for humanitarian aid
- Organized rallies, large scale (>1000 people) events, virtual presidential visit