

Po-Nan Li

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PhD candidate in electrical engineering at Stanford University, skilled in Python and Matlab, with experiences in computational biology and applying machine learning and digital image processing in research, seeking full-time position starting in 2020.

EDUCATION

Ph.D. - Electrical Engineering, Stanford University, California, USA (2020)

Dissertation: Computational approaches for biological imaging and modeling

M.S. - Photonics Technologies, National Tsing Hua University, Hsinchu, Taiwan (2012)

Thesis: Selective excitations of localized surface plasmons in designed nanostructures

B.S. - Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan (2010)

EXPERIENCE

2019 summer **Hardware Engineering Intern**

Daydream, Google

- Applied computational imaging techniques to visual display systems for VR/AR/MR.

2015 — Present **Graduate Research Assistant**

Stanford University and SLAC National Accelerator Laboratory

Advisors: Profs. Soichi Wakatsuki and Piero Pianetta

- Develop computational imaging/microscopy techniques.
- Develop machine learning model for protein structure recognition.
- Study ion transport in biological cells with numerical models.

2012—2015 **Research Assistant**

Institute of Physics, Academia Sinica, Taiwan

Advisor: Prof. Ting-Kuo Lee

- Developed image enhancement algorithms for coherent diffraction imaging (CDI) and cryogenic electron microscopy (cryo-EM).
- Provided numerical and computational solutions for collaborators from both theoretic and experimental physics realms.

2010—2012 **Graduate Research Assistant**

Ultrafast Photonics Laboratory, National Tsing Hua University, Taiwan

Advisor: Prof. Chen-Bin Huang

- Used finite-difference time-domain (FDTD) and near-field microscopy to design and study nanoplasmonics and near-field optics.
- Performed nano-device fabrication.
- Served as a computing cluster manager.

2009—2010 **Undergraduate Research Assistant**

Ultrafast Photonics Laboratory, National Tsing Hua University, Taiwan

Advisor: Prof. Chen-Bin Huang

- Implemented a phase-modulated continuous-wave (PMCW) optical frequency comb.

SKILLS

- Python, Matlab, C/C++, SQL, HTML
- Git, PyTorch, TensorFlow, Pandas
- Arduino, AutoCAD

LEADERSHIP

2017 **Regional Director**, North America Taiwan Study Association Annual Meeting

- Organized a 100+ attendee conference at Stanford. Coordinated all accommodation, transportation, venue and meal logistics.

2016—2017 **Vice President**, Stanford Taiwanese Student Association

- Co-led one of the biggest Taiwanese communities in Silicon Valley. Held various events during term.

SELECTED COURSE PROJECTS

- CS231n: Peak finding for crystallography [\[Report\]](#) [\[Poster\]](#) [\[Code\]](#)
- CS230: Recognition of East Asian language characters [\[Report\]](#) [\[Poster\]](#) [\[Code\]](#)
- CS279: 3-D diffusion-reaction model for hexagonal surface layers [\[Report\]](#)
- CS221: Rapid peak detection for diffraction images [\[Poster\]](#)
- EE267: PhD Archer: The VR game and UX Analysis [\[Report\]](#)
- CS229: Data classification for diffraction images [\[Report\]](#) [\[Poster\]](#) [\[Code\]](#)
- EE368: Incorporating low-resolution image into phase retrieval process [\[Report\]](#) [\[Poster\]](#)
- EE367: Mountable Dynamic Range Enhancer for Digital Cameras [\[Report\]](#) [\[Poster\]](#)

PUBLICATIONS

Referred Journal articles

- [P.-N. Li](#), J. Herrmann, S. Wakatsuki, and H. van den Bedem, "Transport Properties of Nanoporous, Chemically Forced Biological Lattices," (under review).
- J. Herrmann, [P.-N. Li](#) *et al.*, "A Bacterial Surface Layer Protein Exploits Multi-step Crystallization for Rapid Self-assembly," (under review).
- [P.-N. Li](#), J. Herrmann, B. B. Tolar, F. Poitevin, R. Ramdasi, J. R. Bargar, D. A. Stahl, G. J. Jensen, C. A. Francis, S. Wakatsuki, and H. van den Bedem, "Nutrient transport suggests an evolutionary basis for charged archaeal surface layer proteins," ISME J. **12**, 2389 (2018).
- J. Herrmann, F. Jabbarpour, P. G. Bargar, J. F. Nomellini, [P.-N. Li](#), T. J. Lane, T. M. Weiss, J. Smit, L. Shapiro, and S. Wakatsuki, "Environmental Calcium Controls Alternate Physical States of the Caulobacter Surface Layer," Biophys. J. **112**, 1 (2017).
- [P.-N. Li](#), Z.-H. Wu, C.-N. Hsiao, T.-K. Lee, and C.-C. Chen, "Determination of three-dimensional atomic positions from tomographic reconstruction using ensemble empirical mode decomposition," New J. Phys. **18**, 083025 (2016).
- T.-Y. Lan, [P.-N. Li](#), and T.-K. Lee, "Method to enhance resolution of x-ray coherent diffraction imaging for non-crystalline bio-samples," New J. Phys. **16**, 033016 (2014).
- [P.-N. Li](#), H.-H. Tsao, J.-S. Huang, and C.-B. Huang, "Subwavelength localization of near fields in coupled metallic spheres for single-emitter polarization analysis," Opt. Lett. **36**, 2339 (2011).

Selected conference contributions (presenter *italicized*)

- *D.A. Barmherzig*, J. Sun, T.J. Lane and [P.-N. Li](#), "On Block-Reference Coherent Diffraction Imaging", CTH1B, OSA Computational Optical Sensing and Imaging, Orlando, FL, USA, 2018.
- [P.-N. Li](#), P. Pianetta, S. Wakatsuki, and Y. Liu, "Resolution enhancement of transmission x-ray microscopy using coherent diffraction," 12th International Conference on Biology and Synchrotron Radiation, W07, Menlo Park, CA, USA, 2016.
- [P.-N. Li](#), and T.-K. Lee, "Effects of missing diffraction intensities in CDI image reconstruction with template method," 12th International Conference on Biology and Synchrotron Radiation, W06, Menlo Park, CA, USA, 2016.
- [P.-N. Li](#), T.-Y. Lan, and T.-K. Lee, "Method to enhance resolution of x-ray coherent diffraction imaging for non-crystalline bio-samples", International Workshop on Phase Retrieval and Coherent Scattering, Evanston, IL, USA, 2014.
- [P.-N. Li](#), C.-F. Huang, S.-J. Tseng, C. Kim, Y. Kim, C.-H. Lin, T.-Y. Lan, D. Y. Noh, Y. Hwu, K. S. Liang, and T.-K. Lee, "Coherent diffraction imaging with assistance of the metallic template", The 6th International Workshop on FEL Science, Tainan, Taiwan, 2013. **[Best Poster Award winner]**

- P.-N. Li, H.-H. Tsao, and C.-B. Huang, "A plasmonic nanocluster designed for near-field polarization analysis," IEEE Photonics Conference, MX 4, Arlington, VA, USA, 2011.
- P.-N. Li, H.-H. Tsao, and C.-B. Huang, "Multiple selective excitations of localized surface plasmons in coupled gold nano-spheres," Conference on Lasers and Electro-Optics, JTul57, Baltimore, MD, USA, 2011.