Roarke Horstmeyer

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Duke University
Biomedical Engineering Department
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EDUCATION

Doctorate, Electrical Engineering
California Institute of Technology, Pasadena, CA — October 2015
THESIS - Computational microscopy: turning megapixels into gigapixels

Master of Science, MIT Media Lab
Massachusetts Institute of Technology, Cambridge, MA — August 2011
THESIS - Towards a unified treatment of 3D display using partially coherent light

Bachelor of Science, Physics, Japanese (second major)
Duke University, Durham, NC — December 2006

PROFESSIONAL EXPERIENCE

Duke University Biomedical Engineering Department, Durham, NC — July 2018 – Current
Assistant Professor
- Leading the Computational Optics Lab at Duke University
- Pursuing research in computational microscopy, adaptive optics and machine learning

Kernel Inc., Venice, CA — January 2018 – June 2018
Interim CTO
- Acted as Interim CTO for late-stage start-up performing high-risk research and development
- Advised a team of 15 scientists developing a device for non-invasive detection of brain activity

Univ. of Erlangen School of Advanced Optical Technologies, Erlangen, Germany — Dec. 2017 – June 2018
Visiting Professor and Young Researcher Awardee
- Led a small team of graduate students on computational imaging-based research topics
- Collaborated with several research groups, lectured on optics, microscopy, optical scattering

Bioimaging and Neurophotonics Lab, Berlin, Germany — March 2016 – December 2017
Einstein International Postdoctoral Fellow
- Worked with Prof. Benjamin Judkewitz to apply digital optical phase conjugation in neuroscience
- Fully-funded Einstein Fellow at Charité Medical School and Humboldt University of Berlin

Nanotronics Imaging, Hollister, CA — November 2015 – March 2016
Technical Consultant
- Developed a new computational microscope for semiconductor wafer inspection

California Institute of Technology, Pasadena, CA — August 2011 – November 2015
Graduate research assistant, Electrical Engineering Department

- Research towards PhD degree on computational imaging, super-resolution microscopy and biophotonics

Beansprock.com, Cambridge, MA January 2011 – January 2013
Job recommendation engine start-up from the MIT Media Lab
- Constructed recommendation pipeline to pair skills with careers, based upon natural language processing and large-scale statistical modeling

Massachusetts Institute of Technology, Cambridge, MA August 2009 – August 2011
Graduate research assistant, MIT Media Lab
- Research towards Masters degree on computational imaging, computer vision and optimization

The MITRE Corporation, Mclean, VA November 2007 – August 2009
Emerging Technologies Department
- Multi-discipline engineer, performed experimental research on unconventional optical techniques with Dr. Ravi Athale. Main topics included light fields, coded apertures, and computational imaging
- Other research: chip-to-chip interconnects, silicon waveguides, compressive imaging, phase-space optics

PEER-REVIEWED PAPERS

1. W. Liu, R. Qian, S. Xu, P. C. Konda, M. Harfouche, D. Borycki, J. Jonsson, E. Berrocal, C. L. Cooke, H. Wang, Q. Dai and R. Horstmeyer, "Fast and sensitive diffuse correlation spectroscopy with highly parallelized single photon detection," pre-print bioRxiv (2020).
2. K. Kim, P. C. Konda, C. L. Cook, R. Appel and R. Horstmeyer, "Multi-element microscope optimization by a learned sensing network with composite physical layers," In submission, pre-print arXiv:2006.15404 (2020).
3. C. L. Cooke, F Kong, A Chaware, KC Zhou, K Kim, R Xu, DM Ando and R. Horstmeyer, "Physics-enhanced machine learning for virtual fluorescence microscopy," In submission, pre-print arXiv:2004.04306 (2020).
4. P. C. Konda, L. Loetgering, K. C. Zhou, S. Xu, A. R. Harvery and R. Horstmeyer, "Fourier ptychography: current applications and future promises," Optics Express 28(7), 9603–9630 (2020).
5. K. C. Zhou and R. Horstmeyer, "Diffraction tomography with a deep image prior," Optics Express 28(9), 12872–12896 (2020).
6. A. Chaware, C.L. Cooke, K. Kim and R. Horstmeyer, "Towards an Intelligent Microscope: adaptively learned illumination for optimal sample classification," ICASSP 2020, preprint arXiv:1910.10209 (2020).
7. L. Loetgering, M. Baluktsian, K. Keskinbora, R. Horstmeyer, T. Wilhein, G. Schtz, K. Eikema and S. Witte, "Generation and characterization of focused helical x-ray beams," Science Advances 6(7), eaax8836 (2020).
8. A. Muthumbi, A. Chaware, K. Kim, K. C. Zhou, P. C. Konda, B. Judkewitz, A. Erdmann, B. Kappes and R. Horstmeyer, "Learned sensing: jointly optimized microscope hardware for accurate image classification," Biomed. Opt. Express 10(12), 6351-6369 (2019).
9. P. del Hougne, M. F. Imani, A. V. Diebold, R. Horstmeyer, D. R. Smith, "Learned Integrated Sensing Pipeline: Reconfigurable Metasurface Transceivers as Trainable Physical Layer in an Artificial Neural Networkng," Advanced Science 1901913 (2019).
10. R. Horstmeyer, R. Y. Chen, B. Kappes and B. Judkewitz, "Convolutional neural networks that teach microscopes how to image," arXiv:1709.07223 (2018).
11. M. Kadobianskyi, I. N. Papadopoulos, T. Chaigne, R. Horstmeyer, B. Judkewitz, "Scattering correlations of time-gated light," Optica **5**, 389–394 (2018).

12. G. Osnabrugge*, R. Horstmeyer*, I. Papadopoulos, B. Judkewitz and I. M. Vellekoop, "The generalized optical memory effect," Optica **4** 886–892 (2017) (*shared first authorship)

13. Z. Wang, D. Ryu, K. He, R. Horstmeyer, A Katsaggelos and O. Cossairt, "High-speed holographic imaging using compressed sensing and phase retrieval," Biomedical Optics Express **8**, 1981–1995 (2017)

14. R. Horstmeyer, J. Chung, X. Ou, G. Zheng and C. Yang, "Diffraction tomography with Fourier ptychography," Optica **8**, 827–835 (2016)

15. R. Horstmeyer, R. Heintzmann, G. Popescu, L. Waller and C. Yang, "Standardizing the resolution claims for coherent microscopy," Nature Photonics **9**, 68–71 (2016).

16. X. Ou, J. Chung, R. Horstmeyer and C. Yang, "Aperture scanning Fourier ptychographic microscopy," Biomedical Optics Express **7**, 3140–3150 (2016).

17. J. Chung, J. Kim, X. Ou, R. Horstmeyer and C. Yang, "Wide field-of-view fluorescence image deconvolution with aberration estimation from Fourier ptychography," Biomedical Optics Express **7**, 352–368 (2016).

18. M. Henninger, J. Deguchi, Y. G. Yoon, R. Horstmeyer, R. Raskar and E. S. Boyden, "Implantable light field microimagers: a concept for in vivo physiological recording at large scale with single-cell resolution," Journal of Biomedical Optics, under review (2016)

19. J. Holloway, M. S. Asif, M. K. Sharma, N. Matsuda, R. Horstmeyer, O. Cossairt and A. Veeraraghavan, "Toward long distance, sub-diffraction imaging using coherent camera arrays," IEEE Trans. Computational Imaging (2016).

20. R. Horstmeyer, H. Ruan and C. Yang, "Guidestar-assisted wavefront-shaping methods for focusing light into biological tissue," Nature Photonics **9**, 563–571 (2015)

21. B. Judkewitz*, R. Horstmeyer*, I. M. Vellekoop, I. N. Papadopoulos and C. Yang, "Translation correlations in anisotropically scattering media," Nature Physics **11**, 684–689 (2015) (*shared first authorship)

22. R. Horstmeyer, R. Y. Chen, X. Ou, B. Ames, J. A. Tropp and C. Yang, "Solving ptychography with a convex relaxation," New Journal of Physics **15**, 053044 (2015)

23. R. Horstmeyer, S. Assawaworrarit, U. Ruhrmair and C. Yang, "Physically secure and fully reconfigurable data storage using optical scattering," IEEE Hardware Oriented Security and Trust, 157–162 (2015)

24. X. Ou, R. Horstmeyer, G. Zheng and C. Yang, "High numerical aperture Fourier ptychography: principle, implementation and characterization," Optics Express **23**, 3472–3491 (2015)

25. R. Horstmeyer, X. Ou, G. Zheng, P. Willems and C. Yang, "Digital pathology with Fourier ptychography," Computerized Medical Imaging and Graphics **42**, 38-43 (2015)

26. R. Horstmeyer, X. Ou, J. Chung, G. Zheng and C. Yang, "Overlapped Fourier coding for optical aberration removal," Optics Express **22**, 24062–24080 (2014)

27. S. Dong*, R. Horstmeyer*, R. Shiradkar, K. Guo, X. Ou, Z. Bian, H. Zin and G. Zheng, "Aperture-scanning Fourier ptychography for 3D refocusing and super-resolution macroscopic imaging," Optics Express 22, 13586–13599 (2014) (*shared first authorship)

28. R. Horstmeyer and C. Yang, "A phase space model of Fourier ptychographic microscopy," Optics Express **22**, 338–358 (2014)

29. J. L. Hollmann, R. Horstmeyer, C. Yang and C. A. DiMarzio, "Diffusion model for ultrasound-modulated light," Journal of Biomedical Optics **19**, 035005 (2014)

30. G. Zheng, X. Ou, R. Horstmeyer, J. Chung and C. Yang, "Fourier ptychographic microscopy: a gigapixel microscope for biomedicine," Optics & Photonics News **25**, 26–33 (2014, Cover paper)

31. X. Ou*, R. Horstmeyer*, C. Yang and G. Zheng, "Quantitative phase imaging via Fourier ptychographic microscopy," Optics Letters **38**, 4845–4848 (2013) (*shared first authorship)

32. G. Zheng, R. Horstmeyer and C. Yang, "Wide-field, high-resolution Fourier ptychographic microscopy," Nature Photonics **7**, 739–745 (2013)

33. G. Zheng, X. Ou, R. Horstmeyer and C. Yang, "Characterization of spatially varying aberrations for wide field-of-view microscopy," Optics Express **21**, 15131–15143 (2013)
34. B. Judkewitz, Y. M. Wang, R. Horstmeyer, A. Mathy and C. Yang, "Speckle-scale focusing in the diffusive regime with time-reversal of variance-encoded light (TROVE)," Nature Photonics **7**, 300–305 (2013)
35. R. Horstmeyer, B. Judkewitz, I. M. Vellekoop, S. Assawaworrarit and C. Yang, "Physical key-protected one-time pad," Scientific Reports **3**, 3543 (2013)
36. J. L. Hollmann, R. Horstmeyer, C. Yang and C. A. DiMarzio, "Analysis and modeling of an ultrasound-modulated guide star to increase the depth of focusing in a turbid medium," Journal of Biomedical Optics **18**(2), 025004 (2013).
37. R. Horstmeyer, R. Y. Chen, B. Judkewitz and C. Yang, "Markov speckle for efficient random bit generation," Optics Express **20**, 26394–26410 (2012)
38. R. Horstmeyer, S. B. Oh, O. Gupta and R. Raskar, "Partially coherent ambiguity functions for depth-variant point spread function design," Progress in Electromagnetics Research Symposium (PIERS) **7**(1), 95–100 (2011)
39. T. Cuypers, R. Horstmeyer, S. B. Oh, P. Bekaert and R. Raskar, "Validity of the Wigner distribution function for ray-based imaging," IEEE Int. Conf. Computational Photography (ICCP), 1-9 (2011)
40. J. Kim, R. Horstmeyer, I. J. Kim and R. Raskar, "Highlighted depth-of-field photography: Shining light on focus," ACM Transactions on Graphics (TOG) **30**(3), 24 (2011).
41. R. Horstmeyer, S. B. Oh and R. Raskar, "Iterative aperture mask design in phase space using a rank constraint," Optics Express **18**, 22545–22555 (2010)
42. R. Horstmeyer, R. A. Athale, and G. W. Euliss, "Modified light field architecture for reconfigurable multimode imaging," Proc. SPIE 7468, 746804 (2009)
43. R. Horstmeyer, G. W. Euliss, R. A. Athale, and M. Levoy, "Flexible Multimodal Camera Using a Light Field Architecture," IEEE Int. Conf. Computational Photography (ICCP), 1–7 (2009)
44. R. Horstmeyer, G. W. Euliss, R. A. Athale, R. L. Morrison, R. A. Stack, and J. Ford, "Pupil plane multiplexing for multi-domain imaging sensors," Proc. SPIE 7096, 709605 (2008)
45. R. H. Rubin, G. J. Ferland, E. E. Chollet, and R. Horstmeyer, "$^{12}C/^{13}C$ Ratio in Planetary Nebulae from the IUE Archives," The Astrophysical Journal **605**, 784–792 (2004)

CONFERENCE PUBLICATIONS & PRESENTATIONS

- R. Horstmeyer et al., "Designing intelligent gigapixel-scale microscopes," HHMI Janelia Optics and Machine Learning Seminar Series (Invited Talk, 2019).
- M. Harfouche et al., "Imaging the behavior and neural activity of freely moving organisms with a gigapixel microscope," OSA Optics and the Brain (Invited talk, 2019)
- K. Zhou et al, "Improving diffraction tomography with intensity-only images," Face2Phase Optics Conference (Invited Talk, 2019)
- L. Zhong et al., "Depth tracking using a multi-aperture microscope," OSA Computational Optical Sensing and Imaging (Invited talk, 2019)
- R. Horstmeyer, "Using machine learning to optimize how microscopes detect infectious disease," BMES Conference (Invited talk, 2018)
- R. Horstmeyer, "Optimized deep-tissue imaging with the optical memory effect," Duke Physics Colloquium (Invited talk, 2018)
- R. Horstmeyer, "Redesigning microscopes for improved image classification," OSA Imaging Congress (Invited talk, 2018)

- R. Horstmeyer, "A gigapixel camera array for high-throughput microscopy," SPIE DCS (Invited talk, 2018)
- R. Horstmeyer, "Volumetric imaging using Fourier ptychography," Face2Phase Conference, TU Delft (Invited talk, 2017)
- R. Horstmeyer, "Memory effect correlations in random scattering media over space, angle and time," ICERM Waves and Imaging in Random Media (Invited talk, 2017)
- R. Horstmeyer, "Computational microscopes for gigapixel 3D imaging and inspection," Fraunhofer IISB Lithography Simulation Workshop (Invited talk, 2017)
- R. Horstmeyer, "The generalized optical memory effect," Complex Nanophotonics Summer Camp (2017)
- R. Horstmeyer, "A microscope array for imaging over an unbounded field-of-view with cellular-scale resolution," Neurotuscany Conference (2017)
- R. Horstmeyer, "Volumetric phase imaging using Fourier ptychography," OSA Lasers for Sensing and Free-space Communication (Invited talk, 2016)
- R. Horstmeyer, R. Y. Chen, X. Ou, B. Ames, J. A. Tropp and C. Yang, "Solving ptychography with a convex relaxation," SIAM Conference on Imaging Sciences (Invited talk, 2016)
- J. Chung, J. Kim, X. Ou, R. Horstmeyer and C. Yang, "Simultaneous fluorescence and high-resolution bright-field imaging with aberrations correction over a wide field-of-view with FPM," SPIE BiOS (2016).
- R. Horstmeyer, S. Assawaworrarit, U. Ruhrmair and C. Yang, "Physically secure and fully reconfigurable data storage using optical scattering," IEEE HOST (2015)
- R. Horstmeyer, G. Zheng, X. Ou and C. Yang, "Modeling extensions of Fourier ptychographic microscopy," Microscopy and Microanalysis 20, 370-371 (2014)
- R. Horstmeyer, X. Ou, G. Zheng, P. Willems and C. Yang, "Digital pathology with Fourier ptychography," European Congress on Digital Pathology (2014)
- R. Horstmeyer, B. Judkewitz, I. M. Vellekoop and C. Yang, "Secure storage of cryptographic keys within random volumetric materials," Proc. OSA CLEO (2013)
- R. Horstmeyer, S. Assawaworrarit and C. Yang, "Optical physical unclonable functions for reconfigurable public-key generation," Workshop on Cryptographic Hardware and Embedded Systems (2013)
- B. Judkewitz, Y. M. Wang, R. Horstmeyer, A. Mathy and C. Yang, "Optical resolution imaging in the diffusive regime with time-reversal of variance-encoded light (TROVE)," Proc. OSA Novel Techniques in Microscopy (2013)
- R. Horstmeyer, S. B. Oh, H. Gao and R. Raskar, "Alternative models of the rotating beam," Proc. OSA Conference on Digital Holography (2011)
- M. Henninger, R. Horstmeyer, A. Zorzos, J. Scholvin, D. Lanman, C. Fonstad, R. Raskar and E. S. Boyden, "A novel concept for an implantable probe for deep-brain optical measurement of the activity of large populations of neurons," Society for Neuroscience (2011)
- R. Horstmeyer, S. B. Oh and R. Raskar, "Creating aperture masks in phase space," Proc. OSA Imaging Systems (2010)
- R. L. Morrison, R. Stack, R. A. Athale, G. W. Euliss, B. F. Necioglu, R. Horstmeyer and C. Reese, "Dual-band imaging system based on a compact coaxial folded optic architecture," Proc. OSA COSI (2009)
- R. Horstmeyer, B. Guenther, H. J. Kim and S. McCain, "Detection of Bilrubin using Raman Spectroscopy in a Neonatal Skull," APS Division of Laser Science XXIII (2007)

BOOK CHAPTERS

- R. Horstmeyer, H. Ruan, M. Hoffmann and C. Yang, "Imaging deep in the brain with wavefront engineering," in *Handbook of Neurophotonics*, edited by F. S. Pavone and S. Shoham (2020)
- R. Horstmeyer, I. M. Vellekoop and B. Judkewitz, "Transmission matrix correlations," in *Wavefront Shaping*, edited by J. Cubby (2020)

PATENTS

- R. Horstmeyer, R. Horstmeyer, M. Harfouche, R. Appel. System and method to optically authenticate physical objects, US Patent App. 16/630431 (2020).
- J. Alford, A. Marblestone, I. Vellekoop, D. Sobek, M. Henninger, B. Robinson, Y. Shen and R. Horstmeyer. Time-of-flight optical measurement and decoding of fast-optical signals. US Patent App. 16/533,133 (2020).
- H. Ruan, H. Zhou, Y. Shen and R. Horstmeyer. Non-invasive measurement systems with single-photon counting camera. US Patent App. 16/432,793 (2020).
- Y. Shen, H. Ruan, R. Horstmeyer, H. Zhou and J. Alford. Non-invasive measurement system and method using single-shot spectral-domain interferometric near-infrared spectroscopy based on orthogonal dispersion. US Patent App. 16/392,973 (2019).
- J. Alford, R. Horstmeyer, A Marblestone. Non-invasive frequency domain optical spectroscopy for neural decoding. US Patent App. 16/379,090 (2019)
- R. Horstmeyer, H. Zhou, H. Ruan, Y. Shen, J. Alford. Interferometric frequency-swept source and detector in a photonic integrated circuit. US Patent App. 16/392,963 (2019).
- H. Zhou, R. Horstmeyer, H. Ruan, Y. Shen, J. Alford. Non-invasive optical measurement system and method for neural decoding. US Patent App. 16/385,265 (2019).
- H. Ruan, A. Marblestone, R. Horstmeyer, Y. Shen, H. Zhou, J. Alford. Non-invasive optical detection system and method of multiple-scattered light with swept source illumination. US Patent App. 16/393,002 (2019)
- R. Horstmeyer, H. Zhou, Y. Shen and H. Ruan. Spatial and temporal-based diffusive correlation spectroscopy systems and methods. US Patent App. 16/226625 (2019)
- R. Horstmeyer, M. Harfouche. System and method to optically authenticate physical objects. PCT US 2018/041534 (2018)
- R. Horstmeyer, M. Harfouche. Unscanned optical inspection system using a micro camera array. PCT US 2018/065958 (2018)
- R. Horstmeyer, M. Harfouche. Multiple camera microscope imaging with patterned illumination. PCT US 2017/024610 (2017)
- R. Horstmeyer and C. Yang. Fourier ptychographic tomography. US Patent Application US 15/003559 (2016)
- R. Horstmeyer and C. Yang. Epi-Illumination Fourier Ptychographic Microscopy for Thick Biological Samples. US Patent Application US 14/979154 (2016)
- R. Horstmeyer and C. Yang. Multiplexed Fourier Ptychography Imaging Systems and Methods. US Patent Application US 14/960252 (2016)
- R. Horstmeyer, R. Y. Chen, J. A. Tropp and C. Yang. Ptychographic Imaging Systems and Methods with Convex Relaxation. US Patent Application US 14/710947 (2015)
- J. Chung, R. Horstmeyer and C. Yang. Fourier ptychographic retinal imaging methods and systems. US Patent 9,993,149 (2015)

- R. Horstmeyer, G. Zheng, X. Ou and C. Yang. Aperture Scanning Fourier Ptychographic Imaging. US Patent 9,983,397 (2015)
- X. Ou, J. Chung, R. Horstmeyer, G. Zheng and C. Yang. Embedded Pupil Function Recovery for Fourier Ptychographic Imaging Devices. US Patent Application US Patent 9,892,812 (2015)
- R. Horstmeyer, X. Ou, G. Zheng and C. Yang. Variable Illumination Fourier Ptychographic Imaging Systems, Devices, and Methods. US Patent 9,998,658 (2015)
- G. Zheng, C. Yang and R. Horstmeyer. Fourier Ptychographic Imaging Systems, Devices, and Methods. US Patent Application US 14/065,280 (2014)
- G. Zheng, C. Yang and R. Horstmeyer. Fourier Ptychographic X-ray Imaging Systems, Devices, and Methods. US Patent Application US Patent 9,892,812 (2014)
- B. Judkewitz, Y. M. Wang, R. Horstmeyer and C. Yang. Time-reversal of variance-encoded light (TROVE). US Patent 9,354,116 (2014)
- R. Horstmeyer, B. Judkewitz, C. Yang and I. M. Vellekoop. Physical key-protected one-time pad. US Patent 9,054,871 (2015)

RELEVANT NEWS

- "Machine-Learning Microscope Speeds Malaria Diagnosis" (link) *Optics and Photonics News* (2019)
- "Machine Learning Microscope Adapts Lighting to Improve Diagnoses" (link) *Duke University Engineering News* (2019)
- "Machine Learning Microscope Adapts Lighting to Improve Diagnoses" (link) *Phys.org* (2019)
- "Roarke Horstmeyer: Visualizing New Biomedical Imaging Tools and Techniques" (link) *Duke University Engineering News* (2017)
- "Young Researcher Award in Optical Technologies to Roarke Horstmeyer" (link) *University of Erlangen Nuremberg News* (2017)
- "Meet Pratt's New Faculty for 2016-2018" (link) *Duke University Engineering News* (2016)
- "Roarke Horstmeyer wins Charles Wiltz Prize" (link) *Caltech Electrical Engineering News* (2016)
- "Multiple scattering: Unravelling the tangle" (link) *Nature Physics* (2015)
- "Spotlight on graduate research" (link) *Caltech News* (2015)
- "Software: The computer will see you now" (link) *Nature* (2013)
- "One-Time Pad Reinvented to Make Electronic Copying Impossible" (link), *MIT Technology Review* (2013)
- "Digital camera add-on means the light's fantastic" (link), *New Scientist* (2013)

SCHOLARSHIPS and AWARDS

- 2017: SAOT Young Researcher Award in Optical Technologies ($100,000 Prize)
- 2016–2018: Einstein International Postdoctoral Fellowship (full funding)
- 2016: Caltech Charles Wiltz Doctoral Prize (for outstanding doctoral research)
- 2015: Caltech Everhart Lecture Award (for outstanding research and presentation)
- 2013–2015: California Institute of Technology I-Grant Program (2 years, $125,000/year)
- 2011: MIT 100K Business Competition Linked Data Prize
- 2009–2012: National Defense Science and Engineering Graduate Fellowship (3 years, full funding)

- National Physics Honor Society
- 2003–2004: Duke Naval Reserve Officer Training Corps Scholarship
- 2002–2003: Yoshi Hattori Memorial Scholarship for study in Japan

Current Funding

- 2019–2022: RF1 NS113287-01 - National Institutes of Health. "Opto-Crown: Transparent skull with embedded optics for cortex-wide cellular resolution imaging in freely moving mice." E.S. Boyden, S. B. Kodandaramaiah, J. Sherwood, R. Horstmeyer. $1,994,176 total award.
- 2019–2020: Coulter Foundation. "Parallelized 3D whole-slide microscopy for thick cytopathology slides". R. Horstmeyer, S. Jiang, W. C. Foo. $211,051 total award.
- 2018–2020: R44-OD024879-02 - National Institutes of Health. "High-Resolution, Parallelized Imaging of Freely Swimming Zebrafish with a Gigapixel Microscope". R. Horstmeyer, M. Harfouche, E. Naumann, F. Engert. $1,725,000 total award.

PROFESSIONAL SERVICE

- Official Panelist: OSA Spotlight on Optics
- Program committee: OSA Biophotonics Congress 2020
- Program committee: OSA Imaging and Applied Optics Congress 2018–2020
- Program committee: SPIE Computational Optics 2018
- Program committee: Computational Cameras and Displays (CCD) 2014–2018
- Paper reviewer: Optica, Optics Express, Biomedical Optics Express, Optics Letters, Nature Communications, Nature Photonics, Journal of Applied Physics, Applied Physics Letters, JOSA A, Applied Optics, Optical Engineering, Optical Communications, PIERS, ACM SIGGRAPH, Science Advances, IEEE, Ultramicroscopy