

Learning from Light: An Optica Incubator on Machine Learning

13 – 15 September 2023
Optica Global Headquarters
Washington, D.C., USA



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Welcome

Hello and welcome to Washington, D.C., and **Learning from Light: An Optica Incubator on Machine Learning**. This program has been developed by Paul Campagnola, University of Wisconsin-Madison, United States; Rama Chellappa, Johns Hopkins University, United States; and Antonio Napoli, Infinera Corp., Germany.

The incubator begins on the afternoon of 13 September at Optica Headquarters at 15:00 EDT. Wednesday's programming will conclude with a welcome dinner at 18:00 at Bistrot du Coin, located at 1738 Connecticut Ave. The following morning, Thursday, 14 September, there will be breakfast at 8:00, with the program beginning at 8:45 at Optica Headquarters.

Incubator Meetings are designed to provide a unique and focused experience, allowing colleagues working in a niche field to meet and engage in discussions of related advances, challenges and opportunities. If you have feedback on the format of the [Incubator program](#) or suggestions for future Incubators, please share your thoughts with Hannah Walter-Pilon, Optica Director of Technical Community Engagement at incubators@optica.org.

Sincerely,



Elizabeth A. Rogan

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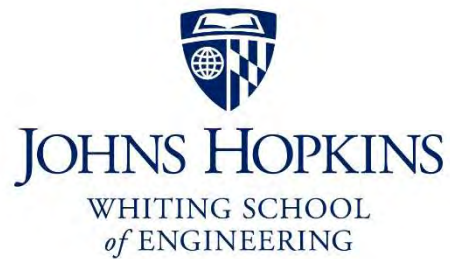
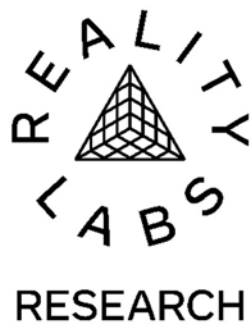
Share your photos and post about your incubator experience across social media! Make sure to use the hashtag [#OpticalIncubator](#).

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As an incubator attendee, you can receive 50% off your first year of Optica membership. Visit optica.org/join and use the code **IM-JOIN50**.

Our Sponsors

Optica and our hosts would like to thank the following sponsors for their support of this incubator meeting.



Johns Hopkins Artificial
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University of Maryland Institute for Advanced Computer Studies

Agenda

Wednesday, 13 September 2023

- 15:00 EDT** **Attendees arrive at Optica Headquarters**
2010 Massachusetts Ave NW, Washington, DC 20036
- 15:15 EDT** **Welcome Remarks**
Elizabeth Rogan, CEO, Optica
- 15:30 EDT** **Program Overview and Goals**
Rama Chellappa, Johns Hopkins University
Paul Campagnola, University of Wisconsin-Madison
Antonio Napoli, Infinera Corp.
- 16:00 EDT** **Keynote Talk on Machine Learning**
Rene Vidal, Johns Hopkins University
- 18:00 EDT** **Welcome Dinner**
Bistrot du Coin, 1738 Connecticut Ave NW, Washington, DC 20009

Thursday, 14 September 2023

- 08:00 EDT** **Breakfast at Optica Headquarters**
- 08:45 EDT** **Overview Talk on Machine Learning & Optics**
Shanhui Fan, Stanford University
- 09:25 EDT** **Overview Talk on Machine Learning & Medicine**
Vikas Singh, University of Wisconsin-Madison
- 10:05 EDT** **Overview Talk on Machine Learning & Optical Networks**
Carlos Natalino, Chalmers University of Technology
- 10:45 EDT** **Coffee Break**
- 11:00 EDT** **Challenges and opportunities related to privacy, bias and fairness, robustness against adversarial attacks, availability of training data**
Rama Chellappa, Johns Hopkins University
Antonio Napoli, Infinera Corp.
Melissa Champer, University of Wisconsin-Madison

12:30 EDT Lunch at Optica Headquarters

13:30 EDT Breakout Session I

Imaging Session: Machine Learning & Imaging

13:30 – 14:00 – Ashok Veeraraghavan, Rice University

14:00 – 14:30 – Ming Lin, University of Maryland at College Park

14:30 – 15:00 – Cheng Peng, Johns Hopkins University

Biomedical Session: Challenges & Opportunities

13:30 – 14:00 – Andy Cohen, Drexel University

14:00 – 14:30 – Juan Caicedo, Morgridge Institute for Research

14:30 – 15:00 – Paul Campagnola, University of Wisconsin-Madison

Networks Session: Machine Learning in a World with Little Data

13:30 – 14:00 – Mëmëdhe Ibrahimî, Politecnico di Milano

14:00 – 14:30 – Giacomo Borraccini, NEC Labs America, Princeton

14:30 – 15:00 – Shrinivas Petale, George Washington University

15:00 EDT Coffee Break

16:00 EDT Breakout Session I Report Out

18:00 EDT Networking Dinner

La Tomato, 1701 Connecticut Ave NW, Washington, DC 20009

Friday, 15 September 2023

08:00 EDT Breakfast at Optica Headquarters

08:30 EDT Breakout Session II

Imaging Session: Machine Learning & Imaging II

08:30 – 09:00 – Matthew Turek, DARPA

09:00 – 09:30 – Vishal Patel, Johns Hopkins University

09:30 – 10:00 – Nakul Shekhawat, Johns Hopkins University

Biomedical Session: Tools

08:30 – 09:00 – Nicholas Durr, Johns Hopkins University

09:00 – 09:30 – Jingxi Li, University of California, Los Angeles

09:30 – 10:00 – Roarke Horstmeyer, Duke University

Networks Session: Low Power Consumption Machine Learning Algorithms

08:30 – 09:00 – Keisuke Kojima, Boston Quantum Photonics

09:00 – 09:30 – Sasipim Srivallapanondh, Aston University

09:30 – 10:00 – Antonio Napoli, Infinera Corp.

10:00 EDT Coffee Break

- 10:30 EDT Breakout Session II Report Out**
- 12:00 EDT Lunch at Optica Headquarters**
- 13:00 EDT Wrap-up and Discuss Next Steps**
- 14:00 EDT Adjourn**

Hosts



Rama Chellappa

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Prof. Rama Chellappa is a Bloomberg Distinguished Professor in the Departments of Electrical and Computer Engineering (Whiting School of Engineering) and Biomedical Engineering (School of Medicine) with a secondary appointment in the Department of Computer Science at Johns Hopkins University (JHU). At JHU, he is also affiliated with CIS, CLSP, IAA, and MINDS. Before coming to JHU in August

2020, he was a Distinguished University Professor, a Minta Martin Professor of Engineering, and a Professor in the ECE department and the University of Maryland Institute Advanced Computer Studies at the University of Maryland (UMD). He holds a non-tenure position as a College Park Professor in the ECE department at UMD. His current researcher interests are computer vision, pattern recognition, machine intelligence and artificial intelligence. He is an elected member of the National Academy of Engineering. He received the K. S. Fu Prize from the International Association of Pattern Recognition (IAPR). He is a recipient of the Society, Technical Achievement, and Meritorious Service Awards from the IEEE Signal Processing Society and four IBM Faculty Development Awards. He also received the Technical Achievement and Meritorious Service Awards from the IEEE Computer Society. He received the Inaugural Leadership Award from the IEEE Biometrics Council and the 2020 IEEE Jack S. Kilby Medal for Signal Processing. Recently, he received the Distinguished Career Award from the Washington Academy of Sciences. At UMD, he received college and university level recognitions for research, teaching, innovation, and mentoring of undergraduate students. He has been recognized as an Outstanding ECE by Purdue University and as a Distinguished Alumni by the Indian Institute of Science, India. He served as the Editor-in-Chief of PAMI. He is a Golden Core Member of the IEEE Computer Society, served as a Distinguished Lecturer of the IEEE Signal Processing Society and as the President of the IEEE Biometrics Council. He is a Fellow of AAAI, AAAS, ACM, AIMBE, IAPR, IEEE, NAI, Optica, Academia Europaea and the Washington Academy of Sciences and holds nine patents.



Antonio Napoli

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Antonio Napoli holds a Ph.D. from the Politecnico di Torino. He was with Siemens, NSN, and Coriant in 2006, 2007, 2013, respectively. Since 2018, he has been with Infinera, where he is leading advance research topics with particular focus on point-to-multipoint optical networks. He served as an OFC TPC member (2017-2019). He has been three times guest editor for JOCN and JLT. He is the technical coordinator of three

Marie Curie H2020 projects. He is the principal investigator for Infinera in three EU funded projects: B5G-OPEN, ALLEGRO, and SEASON. His research interests include DSP, wideband optical systems, transmission modeling, and ML/AI for optics. Dr. Napoli co-authored 7 patents, 250+ peer-to-peer reviewed articles, and one book chapter.



Paul Campagnola

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Paul J. Campagnola obtained his PhD in Chemistry from Yale University in 1992 after which he was a postdoctoral associate at the University of Colorado from 1992-1995. He was on the faculty in the Department of Cell Biology, Center for Cell Analysis and Modeling at the University of Connecticut Health Center from 1995-2010, having adjunct appointments in the Physics Department and Biomedical Engineering Program. In 2010 became an Associate Professor in Departments of Biomedical Engineering and Medical Physics at the University of Wisconsin-Madison and was promoted to Professor in 2013. He is currently the Tong Biomedical Engineering Department Chair and UW Kellett Faculty Fellow. He is a Fellow of Optica and American Institute for Medical and Bioengineering and currently a Fellow in the Big 10 Alliance Academic Leadership Program. His research is focused on studying structural and functional aspects of the extracellular matrix (ECM), where we have developed optical microscopy instrumental and analysis methods to study problems in basic science as well as those with translational potential. He has over 100 peer-reviewed journal articles, several review articles and book chapters, co-edited a book “Second Harmonic Generation microscopy” and given over 100 invited talks. He serves on the editorial board for the Journal of Biomedical Optics and serves on numerous NIH and NSF review panels.

Attendees



Giacomo Borraccini

*Postdoctoral Scientist, NEC Labs America, Princeton
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Giacomo Borraccini currently holds the position of postdoctoral scientist at NEC Laboratories America Inc., Princeton. He received his Ph.D. from the Politecnico di Torino working in the Physical Layer Aware Networking (PLANET) team within the Optical Communication (OptCom) group under the supervision of Prof. Vittorio Curri, and defending a thesis entitled Cognitive and Autonomous Software-Defined Open Optical Networks. Research activity is focused on the development of methodologies and algorithms that allow automated operation and cognitive use of an open optical network, with the aim of maximizing capacity through the optimization of transmission quality. The topics covered include the definition of automatic procedures for the characterization of the physical layer, the management and optimization of multiband amplification systems (EDFA and Raman amplifiers) using both analytical models, artificial intelligence, and optimization algorithms. Since June 2020, he has actively contributed to the development of the Gaussian Noise software in Python (GNPy) scientific library within the Physical Simulation Environment (PSE) subgroup of the Open Optical Packet & Transport (OOPT) project by the Telecom Infra Project. In 2021, he held the position of president of the Torino Optica Student Chapter.



Juan Caicedo

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My work is focused on creating computational models of phenotypic variation using microscopy imaging and machine learning. Microscopy imaging is the best strategy to observe the complexity of cellular structures and tissue organization, and to capture complex phenotypes in space and time. We use machine learning to model the biological information captured in microscopy images and to enable quantitative inference with complex phenotypes. These computational models enable us to study the impact of diseases and the effects of treatments at the cellular level, bringing precision and sensitivity to biological research.



Melissa Champer

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Melissa Champer is a senior graduate student at the University of Wisconsin-Madison in the Campagnola lab studying the intersection of microscopy and generative adversarial networks. Her research uses second harmonic generation imaging to collect images of collagen in a variety of tissues and diseases. Using a modified version of StyleGan, these images are used to investigate structural features of collagen fiber organization. Melissa is excited to share more about the benefits and pitfalls of this approach, while learning about other projects in this collaborative field.



Andrew Cohen

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Andrew Cohen joined the faculty in the department of electrical and computer engineering at Drexel University as an associate professor in 2012. Before coming to Drexel, he was an assistant professor at the University of Wisconsin-Milwaukee. He received his Ph.D. from the Rensselaer Polytechnic Institute in May 2008 working with Prof. Badri Roysam. His postdoctoral research on developing computational approaches to quantifying deficiencies in axonal organelle transport due to neurodegenerative disease was funded by the Cure Huntington's Disease Foundation. Dr. Cohen was previously employed as a software design engineer in the DirectX group at Microsoft where he designed operating systems software for gaming applications and as a microprocessor product engineer at Intel Corp. Dr. Cohen is a senior member of the IEEE.



Nicholas Durr

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Nick is an Assistant Professor of Biomedical Engineering at Johns Hopkins University, with appointments in the Center for Bioengineering Innovation and Design, Electrical and Computer Engineering, and Ophthalmology. His lab works at the intersection of optics, medical devices, and machine learning.



Shanhui Fan

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Shanhui Fan is the Joseph and Hon Mai Goodman Professor in the School of Engineering, a Professor of Electrical Engineering, a Professor of Applied Physics (by courtesy), and a Senior Fellow of the Precourt Institute for Energy, at the Stanford University. He received his Ph. D in 1997 in theoretical condensed matter physics from the Massachusetts Institute of Technology (MIT). His research interests are in fundamental studies of solid state and photonic structures and devices, especially photonic crystals, plasmonics, and meta-materials, and applications of these structures in energy and information technology applications. He has published over 600 refereed journal articles, has given over 380 plenary/keynote/invited talks, and holds over 70 US patents. He has cofounded two companies aiming to commercialize high-speed engineering computations and radiative cooling technology respectively. Prof. Fan received a National Science Foundation Career Award (2002), a David and Lucile Packard Fellowship in Science and Engineering (2003), the U. S. National Academy of Sciences W. O. Baker Award for Initiatives in Research (2007), the Adolph Lomb Medal from Optica (2007), a Vannevar Bush Faculty Fellowship from the U. S. Department of Defense (2017), a Simons Investigator in Physics (2021), and the R. W. Wood Prize from Optica (2022). He is a Web of Science Highly Cited Researcher since 2015, and a Fellow of the IEEE, the American Physical Society, Optica, and the SPIE.



Wolfgang Heidrich

Professor, KAUST

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Wolfgang Heidrich is a Professor of Computer Science and Electrical and Computer Engineering in the KAUST Visual Computing Center, for which he also served as director from 2014 to 2021. Prof. Heidrich joined King Abdullah University of Science and Technology (KAUST) in 2014, after 13 years as a faculty member at the University of British Columbia. He received his PhD in from the University of Erlangen in 1999, and then worked as a Research Associate in the Computer Graphics Group of the Max-Planck-Institute for Computer Science in Saarbrücken, Germany, before joining UBC in 2000. Prof. Heidrich's research interests lie at the intersection of imaging, optics, computer vision, computer graphics, and inverse problems. His more recent interest is in computational imaging, focusing on hardware-software co-design of the next generation of imaging systems, with applications such as High-Dynamic Range imaging, compact computational cameras, hyperspectral cameras, to name just a few. Prof. Heidrich's work on High Dynamic Range Displays served as the basis for the technology behind Brightside Technologies, which was acquired by Dolby in 2007. Prof. Heidrich is a Fellow of the IEEE, AAIA, and Eurographics, and the recipient of a Humboldt Research Award as well as the ACM SIGGRAPH Computer Graphics Achievement Award.



Roarke Horstmeyer

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Roarke Horstmeyer is an assistant professor of Biomedical Engineering, Electrical and Computer Engineering, and Physics at Duke University. He develops microscopes, cameras and computer algorithms for a wide range of applications, from forming large-area, high-resolution 3D videos of freely moving organisms to detecting blood flow and brain activity deep within tissue. Before joining Duke in

2018, Dr. Horstmeyer was a visiting professor at the University of Erlangen in Germany and an Einstein International Postdoctoral Fellow at Charité Medical School in Berlin. Prior to his time in Germany, Dr. Horstmeyer earned a PhD from Caltech's EE department (2016), an MS from the MIT Media Lab (2011), and bachelor's degrees in Physics and Japanese from Duke in 2006.



Mëmëdhe Ibrahimi

Assistant Professor, Politecnico di Milano
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I am an Assistant Professor at Politecnico di Milano, working on the application of Machine Learning (ML) - based approaches to optical and microwave networks. My main research interests include the application of ML for predictive maintenance of communication networks and ML applied to combinatorial optimization (ML alongside Operation Research).



Keisuke Kojima

CEO, Boston Quantum Photonics LLC
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Keisuke Kojima has been working in the area photonic devices and optical communications over 42 years. In 2023, he became an IEEE Fellow “for application of AI technologies to optimize the design of active and passive photonic devices”. In 2015, he was elevated to an Optica Fellow “For outstanding contributions in semiconductor lasers, in particular high-speed uncooled Fabry-Perot and distributed-feedback (DFB) lasers for optical access and data communications, and narrow-linewidth DFB lasers for coherent optical communications”. He obtained his B.S., M.S., and Ph.D. degrees from the University of Tokyo, Japan, and M.S. degree from the University of California, Berkeley. He spent eight years at Mitsubishi Electric in Japan, working on narrow linewidth DFB and DBR lasers, grating-coupled surface emitting lasers, and optical

neural networks. He then spent nine years at AT&T/Lucent Bell Laboratories covering research areas such as uncooled Fabry-Perot and DFB lasers, VCSELs, and passive optical network systems. From 2005 to 2021, he worked with Mitsubishi Electric Research Laboratories (MERL) in Cambridge, MA, focusing on designing nanophotonic devices and coherent optical systems using deep learning techniques. In 2022, he founded Boston Quantum Photonics LLC, a company dedicated to developing novel nanophotonics devices for quantum computing/communication utilizing state-of-the-art machine learning technology. In recent years, his research has centered on the application of generative neural networks for the design of nanophotonic devices. His work in this area has led him to deliver eight invited talks at industry-leading events like ECOC'21 Workshop, Optica IPR'21, Photonics West'21, ACP Workshop'20, OFC'20, OFC'20 Symposium, PIERS'19, and ECOC Workshop'19. He also wrote two book chapters (Wiley-ACH 2022, Elsevier 2023), and an invited paper (JLT 2021).



Jingxi Li

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Jingxi Li received his BS degree in optoelectronic information science and engineering from Zhejiang University, Hangzhou, Zhejiang, China, in 2018. Currently, he is working toward his PhD in the Electrical and Computer Engineering Department, University of California, Los Angeles, California, United States. His work focuses on optical computing and information processing using diffractive networks and computational optical imaging for biomedical applications.



Ming Lin

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Ming C. Lin received her B.S., M.S., Ph.D. degrees in Electrical Engineering and Computer Science respectively from the University of California, Berkeley. She has been a Distinguished University Professor, Dr. Barry Mersky and Capital One E-Novate Endowed Professor, and former Elizabeth Stevenson Iribe Chair of Computer Science at the University of Maryland at College Park. She is also an Amazon Scholar and John R. & Louise S. Parker Distinguished Professor Emerita of Computer Science at University of North Carolina (UNC) - Chapel Hill. She has received several honors and awards, including the NSF Young Faculty Career Award, UNC Hettleman Award for Scholarly Achievements, IEEE VGTC VR Technical Achievement Award, Washington Academy of Sciences Distinguished Career Award, and several best paper awards. She is a Fellow of National Academy of Inventors, ACM, IEEE, Eurographics, ACM SIGGRAPH Academy and IEEE VR Academy. Her research interests include AI/ML, computer graphics, robotics, extended reality, and human-computer interaction, with focuses on differentiable physics, physically-based modeling, sound rendering, haptics, algorithmic robotics, virtual environments, interactive techniques, geometric computing, and distributed interactive simulation. She has (co-) authored more than 300 refereed scientific publications, co-edited/authored five books.



Carlos Natalino

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Carlos Natalino is a Researcher with the Optical Networks Unit, Department of Electrical Engineering, Chalmers University of Technology. He obtained his PhD degree from the Federal University of Pará, Brazil, in 2016. His research focuses on network automation and on the challenges and opportunities for application of machine learning in network

automation problems. In particular, over the past years, he has been researching how to leverage machine learning for optical network design and operation, in problems such as resource efficiency (e.g., spectrum) and physical layer security. When it comes to machine learning algorithms, Carlos is especially interested in reinforcement learning, having developed the Optical RL-Gym open-source toolkit. Carlos has been involved in several national and international projects funded by research bodies in EU, Sweden, and Brazil. He has also been involved in teaching computer programming courses in Brazil and Sweden. He is an IEEE and Optica member.



Linh Nguyen

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Linh Nguyen is a multidisciplinary scientist, engineer, and coder who has spent over five years in the fundamental science research environment of a Department of Energy Office of Science laboratory and seven years in industrial R&D. She began her career as a Laser Scientist at Synrad doing mathematical modeling, design, and rapid prototyping at the intersection of lasers, optics, plasma physics, and RF engineering. Her programming focus at the time was on computational electromagnetics. Currently, she works as a Staff Laser/Electrical Engineer in the Collider-Accelerator Department at Brookhaven National Laboratory, mostly in support of the Relativistic Heavy Ion Collider and beam cooling projects, which rely on solid-state and fiber lasers for electron beam generation. Building on her work there on code-driven feedbacks, automation algorithms, and self-aligning optical systems, she also leads multiple efforts related to physics-based simulations and machine learning. Linh earned a BS in Physics and an MS in Electrical Engineering from the University of Washington and is nearing completion of an MS in Physics from Indiana University Bloomington. She has also been granted two patents.



Vishal Patel

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Vishal M. Patel is an Associate Professor in the Department of Electrical and Computer Engineering (ECE) at Johns Hopkins University. He has received a number of awards including the 2021 NSF CAREER Award, the 2021 IEEE SPS Pierre-Simon Laplace Early Career Technical Achievement Award, the 2021 International Association for Pattern Recognition Young Biometrics Investigator, the 2016 ONR Young Investigator Award, the 2016 Jimmy Lin Award for Invention, and A. Walter Tyson Assistant Professorship Award.



Cheng Peng

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Cheng Peng is a post-doctoral fellow at the Johns Hopkins University and a member of the Artificial Intelligence for Engineering and Medicine (AIEM) Lab, advised by Prof. Rama Chellappa. He obtained his PhD in Computer Science from the Johns Hopkins University and his master's and bachelor's degrees in Electrical Engineering from the University of Maryland, College Park. Cheng's research focuses on 3D computational imaging and its application in the natural and medical image domains. He has published several works in 3D image reconstruction, super-resolution, semantic segmentation, and view synthesis in premier conferences such as CVPR and MICCAI. A common theme in his work is to incorporate imaging physics and domain adaptation techniques to ensure algorithm robustness in non-ideal acquisitions.



Shrinivas Petale

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Shrinivas is currently working towards finishing his PhD with a focus on Optical Networks in Electrical Engineering Major as a Graduate Research Assistant at George Washington University, USA. His research areas include resource allocation in optical networks, network management, and network optimization using machine learning. He has a keen interest in the field of networking and research. He recently finished his internship at AT&T where he automated the proactive management of IPv4 space owned by AT&T using machine learning. Last year, he also interned at Meta where he worked on automating an in-production tool in Meta's backbone network using machine learning. Prior to joining the PhD program, he worked as a Junior Research Fellow at IIT (ISM), Dhanbad, India where he worked on network management and resiliency in software-defined networking. Both projects were funded by two research organizations under the Government of India. He received his M.Tech degree (with Silver Medal) in Electronics and Communication Engineering from IIT (ISM), Dhanbad, India and his B.Tech. degree in Electronics and Telecommunication Engineering from GCOE, Amravati, India.



Nakul Shekhawat

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Nakul Shekhawat, M.D., M.P.H. is an ophthalmologist and eye surgeon at the Johns Hopkins Wilmer Eye Institute. He received his M.D. degree from Vanderbilt University School of Medicine and his M.P.H. degree in epidemiology and biostatistics from the Johns Hopkins Bloomberg School of Public Health. He completed ophthalmology residency at the renowned Kellogg Eye Center, University of Michigan where he received the Resident Excellence Award from the American Society of Cataract and Refractive Surgery.

He completed additional subspecialty training in cornea, external disease, and refractive surgery at the Wilmer Eye Institute where he was awarded the prestigious Claes Dohlman Award from Harvard Medical School recognizing the most outstanding cornea fellow in the country. Dr. Shekhawat's NIH-funded domestic research focuses on improving diagnosis and assessment of corneal infections using novel corneal imaging techniques. He also co-leads a team of biomedical engineers to develop smartphone-based telemedicine devices for diagnosis of eye diseases in low-resource settings.



Sasipim Srivallapanondh

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I obtained my bachelor's degree in electrical engineering with a specialization in communications from Kasetsart University in Thailand. During my studies, I spent an academic exchange year at National Chung Hsing University in Taiwan. After my graduation, I was granted a prestigious Erasmus Mundus Joint Master's Degree Programme scholarship. I graduated with a dual MSc degree in Smart Telecom and Sensing Networks with Distinction from Aston University in the UK and the National and Kapodistrian University of Athens in Greece. Presently, my academic journey has led me to pursue a PhD, generously supported by the EU Horizon2020, specifically the MENTOR project, at Aston University. My research is dedicated to the complexity reduction and for deep machine learning-based optical transmission systems. Within this domain, my primary focus is the development and implementation of neural network-based optical equalizers. An exciting dimension of my academic pursuits is the opportunity for secondment offered by the MENTOR project. This has brought me work with to Infinera, Munich, Germany, where I am currently engaged in valuable hands-on experience.



Matt Turek

Deputy Director, DARPA
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Matt Turek is the deputy office director for the Defense Advanced Research Agency's (DARPA) Information Innovation Office (I2O), where he provides technical leadership and works with program managers to envision, create, and transition capabilities that ensure enduring information advantage for the United States and its allies. Previously, Turek served as I2O's acting deputy director and as a program manager for AI-related programs, including Explainable AI, Machine Common Sense, Media Forensics, and Semantic Forensics. He joined DARPA from Kitware, Inc., where he led a team developing computer vision technologies. Prior to that role, he was at GE Global Research conducting research in medical imaging and industrial inspection.



Ashok Veeraraghavan

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Ashok Veeraraghavan is currently a Professor of Electrical and Computer Engineering at Rice University, TX, USA. At Rice, he directs the computational imaging lab which focuses on solving hard and challenging problems in imaging and vision by co-designing sensors, optics, electronics, signal processing, and machine learning algorithms. Before joining Rice University, he spent three wonderful and fun-filled years as a Research Scientist at Mitsubishi Electric Research Labs in Cambridge, MA. He received his Bachelors in Electrical Engineering from the Indian Institute of Technology, Madras in 2002 and M.S and PhD. degrees from the Department of Electrical and Computer Engineering at the University of Maryland, College Park in 2004 and 2008 respectively. His thesis received the Doctoral Dissertation award from the Department of Electrical and Computer Engineering at the University of Maryland. His work has won numerous awards

including the Charles Duncan Innovation Award 2019, Hershel. M. Rich Invention Award in 2016 and 2017, and an NSF CAREER award in 2017.



René Vidal

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René Vidal is the Penn Integrates Knowledge and Rachleff University Professor of Electrical and Systems Engineering & Radiology and the Director of the Center for Innovation in Data Engineering and Science (IDEAS) at the University of Pennsylvania. He also directs THEORINET, an NSF-Simons Collaboration on the Mathematical Foundations of Deep Learning, and the NSF TRIPODS Institute on the Foundations of Graph and Deep Learning. He is also an Amazon Scholar, an Affiliated Chief Scientist at NORCE, and an Associate Editor in Chief of TPAMI. His current research focuses on the foundations of deep learning and trustworthy AI and its applications in computer vision and biomedical data science. He is an ACM Fellow, AIMBE Fellow, IEEE Fellow, IAPR Fellow and Sloan Fellow, and has received numerous awards for his work, including the IEEE Edward J. McCluskey Technical Achievement Award, D'Alembert Faculty Award, J.K. Aggarwal Prize, ONR Young Investigator Award, NSF CAREER Award as well as best paper awards in machine learning, computer vision, controls, and medical robotics.



Min Xu

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Min Xu is a Professor of Physics & Astronomy at Hunter College and The Graduate Center of the City University of New York. He studied Physics at Fudan University in China and received his Ph. D degree from CUNY in 2001. His technical interests and activities are in the areas of biomedical photonics, mesoscopic physics, and inverse problems. The current focus is to develop novel optical spectroscopy, microscopy, and imaging technologies for biology and medicine. He has authored or co-authored 6 book/book chapters and over 65 peer-reviewed journal papers. He is a Senior Member of Optica since 2015.

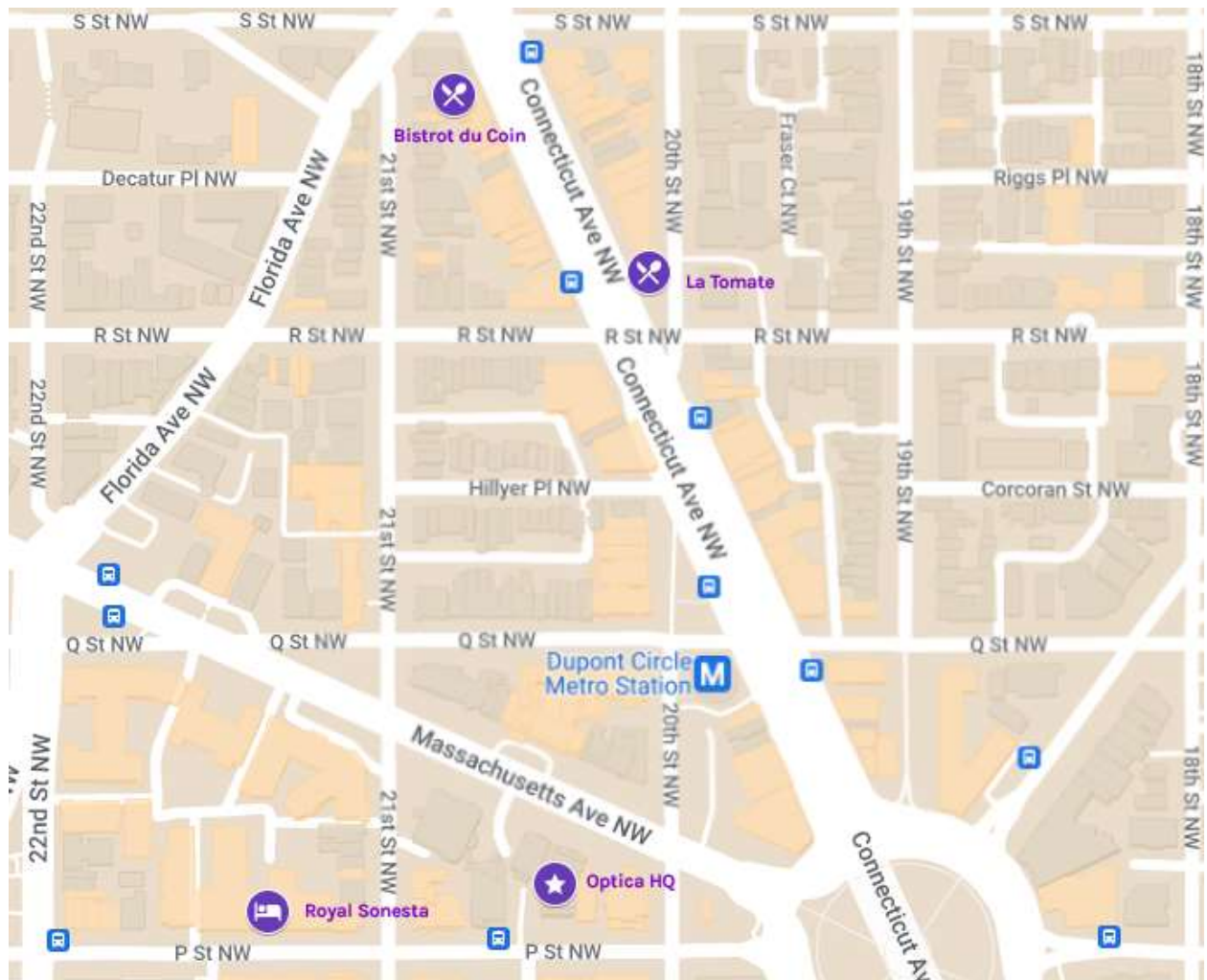
Map

Optica Headquarters: 2010 Massachusetts Ave NW

Royal Sonesta Hotel: 2121 P St NW

Welcome Dinner: Bistrot du Coin, 1738 Connecticut Ave NW

Networking Dinner: La Tomate, 1701 Connecticut Ave NW



Anti-Harassment Policy and Code of Conduct

Optica is committed to providing an environment that is conducive to the free and robust exchange of scientific ideas. This environment requires that all participants be treated with equal consideration and respect. While Optica encourages vigorous debate of ideas, personal attacks create an environment in which people feel threatened or intimidated. This is not productive and does not advance the cause of science. All participants in Optica and Optica-managed events and activities are therefore expected to conduct themselves professionally and respectfully.

It is the policy of Optica that all forms of bullying, discrimination and harassment, sexual or otherwise, are prohibited in any Optica or Optica-managed events or activities. This policy applies to every individual at the event, whether attendee, speaker, exhibitor, award recipient, staff, contractor or other. It is also a violation of this policy to retaliate against an individual for reporting bullying, discrimination or harassment or to intentionally file a false report of bullying, discrimination or harassment.

Bullying, discrimination and harassment of any sort by someone in a position of power, prestige or authority is particularly harmful since those of lower status or rank may be hesitant to express their objections or discomfort out of fear of retaliation.

Optica may take any disciplinary action it deems appropriate if, after thorough investigation, it finds a violation occurred.

For complete policy information visit optica.org/codeofconduct.

If you wish to report bullying, discrimination, or harassment you have witnessed or experienced, you may do so through the following methods:

- Use the online portal optica.org/incidentreport
- Email codeofconduct@optica.org