

Name Yurii Vlasov

Title John Bardeen Endowed Chair Professor of Engineering and Physics

Office Address: University of Illinois at Urbana Champaign, Urbana 61801, IL

PERSONAL STATEMENT

My research has been focused lately on development of advanced engineering approaches aimed at reverse engineering of the brain circuits. The major themes include development of silicon-based nanofluidic and nanophotonic implantable neural probes, in-vivo neurobiological experiments with massive recording and manipulation of brain activity, and, lastly, development of machine-learning algorithms to analyze these large neural datasets. The ultimate goal is to get insights on how our brain works and to enable novel clinical treatments of neurological disorders.

I have three decades of experience in building large-scale research projects that require assembling extended cross-disciplinary teams of top scientists from industry and academia funded by both industrial and government sources. Being a physicist by training I became one of the pioneers of nanophotonics – an emerging technology that allows to shape and manipulate light signals on silicon chips using tiny photonic nanostructures. During my 15-year tenure at IBM Research I led broad company-wide efforts in integrated silicon nanophotonics from its early fundamental research stage up to commercial manufacturing of optical transceivers for large-scale datacenters and optical communications. The technology has been fully qualified and lately deployed for commercial production at GlobalFoundries.

EDUCATION:

Ph.D. Ioffe Institute of Physics and Technology, St.-Petersburg, Russia 1995

M.S. University of St.-Petersburg, Russia 1988

EMPLOYMENT:

2021-current John Bardeen Endowed Chair, Electrical Engineering and Physics, UIUC
2017-current Inaugural Professor, Carle Illinois College of Medicine, UIUC, Urbana, IL
2016-2021 GEBI Founder Professor of Engineering, UIUC, Urbana, IL
2013-2018 Senior Fellow, HHMI Janelia Research Campus, Ashburn, VA
2001-2016 Manager and Principal Member of Research Staff, IBM, Yorktown, NY
1998-2001 Scientist, NEC Research Institute, Princeton, NJ
1996-1997 Postdoctoral Fellow, Strasbourg Institute of Materials Physics, France
1988-2000 Research Scientist, Ioffe Institute of Physics and Technology, Russia

PROFESSIONAL AFFILIATIONS:

Argonne National Laboratory, Scientific Advisory Board, Member, (2016-current)

National Institute of Health, BRAIN Initiative, Proposal Review Panels, Member (2015-current)

IEEE Standards, 100G Ethernet 802.3bm, Member (2012-2014)

National Science Foundation, Advisor to various Research Centers (2001-2018)

DARPA Defense Sciences Research Council (2003)

PROFESSIONAL ASSOCIATION/SOCIETY MEMBERSHIPS:

Member, National Academy of Engineering

Fellow, Optical Society of America

Fellow, Institute of Electrical and Electronic Engineering

Fellow, American Physical Society

Member, Society for Neuroscience

AWARDS AND HONORS:

IBM Corporate Achievement Award, IBM 2012

“Best of IBM” Award, IBM 2012

Scientist of the Year, Scientific American Journal 2006

Research Postdoctoral Fellowship, French Ministry of Education 1996

Prize of the Scientific Council of Ioffe Institute 1989

PATENTS AND PUBLICATIONS:

Total number of publications >300 including journal papers, refereed proceedings, and book chapters. Talks at conferences and symposia in total > 200 including >100 invited, plenary, tutorials. >100 patents, including issued (>65) and pending (>35). Cumulative citation index Scholar: >24000, h-factor:>65

Google Scholar: <https://scholar.google.com/citations?user=Jv43yloAAAAJ&hl>

TEACHING:

University of Illinois at Urbana-Champaign, Electrical Engineering Department

[ECE 421](#) “Neural Interface Engineering” Fall 2022, Spring 2023, Spring 2024

[ECE 340](#) “Electronic Devices” Spring 2021, Fall 2023

[ECE 452](#) “Electromagnetic Fields and Electro-optics” Fall 2016, Fall 2017, Fall 2018, Fall 2019, Fall 2020

[ECE 442](#) “Silicon Integrated Photonics” Spring 2017, Spring 2018, Spring 2019, Spring 2020

Carle Illinois College of Medicine, Urbana-Champaign

BSE 634 “Clinical Neuroscience”, Spring 2019, Spring 2020

CLEO/QELS conference

SC466 Short course “Silicon Integrated Photonics” 2018, 2019, 2020, 2021

Columbia University, Electrical Engineering Department

ELEN E4944 Principles of Device Microfabrication, Fall 2008

ELEN E9402 Quantum Electronics, Fall 2007

MENTORSHIP

University of Illinois at Urbana-Champaign

Postdoctoral Scientists

Dr. Sungho Kim, 2019-2022, currently Engineer at Samsung Electronics

Dr. Ryan Loh, 2017-2021, currently Data Scientist, Denver Health

Graduate Students

Akshit Mahajan (ECE) 2023-current

Jacky Xiang (ECE), 2023-current

Garima Gupta (ECE) 2023-current

Miles Guo (ECE) 2023-current

Alex Armstrong (Neuroscience), 2019-current

Hrishikesh Iyer (ECE), 2019-current

Yu Ding (Physics), 2017-current

Christopher Brenden (BioEng), 2018-current

Weihua Shi (ECE), 2019-current

Colin Graber (CS), 2015-2022, currently Software Engineer at Waymo

Hu Kun (BioEng), 2021-2023, currently Data Engineer at StoneX

Yan Zhang (ECE), 2017-2022, currently Software Engineer at Google AI

Yifei Yang (ECE), 2017-2019, currently ML Engineer at Apple

Ari Esters (ECE), 2015-2018, currently Sr. Engineer at Illimina

Oscar Bi (ECE), 2016-2018, currently Process Engineer at Micron

Prasoon Jha (ECE), 2018-2021, currently FPGA Engineer at Intel

Undergraduate students

Leon Ku (ECE) 2023-current

Yuhan Liu (Biology) 2023-current

Justin Pan (MechSE) 2023-current

Nathan Moskal (ECE) 2023

Jacky Xiang (ECE) 2022

Nur Al-Kodmany (Psychology) 2021-2023

Kathleen Ferreira (MechSE), 2019-2020

Alyssa Licudine (BioEng) 2019-2020

Hu Kun (Biology), 2018-2020

IBM TJ Watson Research Center

Postdoctoral Scientists

Eric Dulkeith (TU Munich) “Optical nonlinearities in silicon photonic crystal waveguides” 2003-2005. Currently Director at IBM

Fengnian Xia (Princeton) “Slow light in coupled resonators” 2005-2007, Currently Assoc. Professor at Yale

William Green (Caltech) “Silicon modulator” 2006-2007, Currently Director at IBM Research

Joris Van Campenhout (Ghent) “Broadband optical switches” 2007-2009, Currently Director at IMEC

Jin Hong Park (Stanford) “Dark current reduction in Ge MSM photodetectors” 2009-2010, Currently Ass. Professor at Sungkyunkwan University, S. Korea

Jessie Rosenberg (Caltech) “Microring silicon modulators” 2010-2011, Currently Manager at IBM Research

Jon Proesel (CMU) “CMOS analog circuits design for nanophotonics” 2010-2012, Currently Director IC at Nubis Communications

Huapu Pan (Virginia Tech) “Photodetectors and integrated nanophotonics receivers” 2010-2012, Currently at Google AI

Seyoung Kim (UT Austin) “Neuromorphic RRAM devices” 2014-2015, Currently Ass. Prof. at POSTECH, S. Korea