Professor Boon Thau Loo

University of Pennsylvania, School of Engineering and Applied Science
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EXECUTIVE LEADERSHIP SUMMARY

Academic leader with more than a decade of graduate education leadership and a record of program building, research impact, and institution-scale execution. As Senior Associate Dean, oversee all graduate and professional programs at Penn Engineering, including doctoral programs, on-campus and online professional master's programs, global initiatives, engineering entrepreneurship, and academic operations. Grew professional master's enrollment from 1,300 students in 2018 to approximately 5,500 in 2026, and the Ph.D. population from just over 600 in 2019 to nearly 1,000 in 2026; revenue from professional master's growth funded major research and educational initiatives across the School. Serve on the Provost's Technology Planning Council, Penn's governing body for technology strategy.

Founded Penn Engineering Online and scaled it into a large, sustainable professional education platform. Led the creation of 15 degree programs, pathways, and credentials, including the first Ivy League online computer science master's degree for students without prior CS experience, the first Ivy League online master's in Artificial Intelligence, online MSE programs in Data Science and in Technology and Innovation, the MSE in Software Systems and Cybersecurity, graduate certificates, and accelerated pathways. Built a teaching faculty of 40+ for online master's programs and established cross-school collaborations with Wharton, Perelman School of Medicine, Penn Carey Law, and the College of Liberal and Professional Studies, broadening access and global reach.

Maintain strong alumni and industry engagement through speaking engagements across the United States and Asia, executive visits to companies including Amazon, Apple, Google, and Microsoft, and global alumni events. Partner with development leadership to steward donor-funded fellowships and expand Ph.D. scholarship support, and work with Penn Engineering's advisory and innovation boards to strengthen philanthropic and corporate partnerships.

Research innovator in distributed systems, networking, and data management, with sustained impact in funding, mentoring, and technology transfer. PI or co-PI on 36 external research awards from NSF, DARPA, ONR, AFOSR, and industry, including 20 as PI or lead Penn PI. Graduated 22 Ph.D. students and mentored 3 postdoctoral researchers, who now hold faculty positions at the University of Toronto, Stony Brook University, Illinois Institute of Technology, ShanghaiTech University, and City University of Hong Kong, have earned tenure at Georgetown University and Temple University, and lead research in industry. Student distinctions include three Rubinoff Best Dissertation Awards, a SIGMOD Jim Gray Dissertation Award honorable mention, the USENIX NSDI 2024 Outstanding Paper Award, the EDBT 2020 Best Paper Award, and recognition at SIGCOMM and N2Women.

Recipient of numerous honors for research, teaching, innovation, and service, including election as a Fellow of the National Academy of Inventors (2025), the ACM SIGMOD Dissertation Award, the David J. Sakrison Memorial Prize for the most outstanding EECS dissertation at UC Berkeley, the NSF CAREER Award, the AFOSR Young Investigator Award, a Google Research Award, Penn Emerging Inventor of the Year, and International Student Advocate of the Year from Penn ISSS. Author of more than 180 peer-reviewed publications, including 84 papers in highly selective conferences such as SIGMOD, VLDB, SIGCOMM, NSDI, and SOSP, and 27 journal articles. Co-founded two startups: Netsil, acquired by Nutanix in 2018 for approximately US$67.5M, and Termaxia, acquired by Frontiir Inc. in 2020, supported by SBIR and I-Corps commercialization funding, with five granted patents. Experienced in IP development, corporate partnerships, investor engagement, and post-acquisition advisory roles.

Teach every fall, spring, and summer across undergraduate, graduate, and online programs, including large-enrollment courses that regularly exceed 200 students, while serving in senior administrative roles. Recipient of the Lindback Award for Distinguished Teaching, the University of Pennsylvania's highest teaching honor, and the Ruth and Joel Spira Award for Excellence in Teaching. Developed curriculum innovations in distributed systems, networking, operating systems, and senior design that have steadily improved course outcomes and evaluations. Leadership is grounded in a vision of access, research translation, interdisciplinary collaboration, and experiential learning.

CURRENT APPOINTMENTS

Senior Associate Dean, School of Engineering and Applied Science, University of Pennsylvania. Oversee all graduate and professional academic programs, including doctoral programs, on-campus and online professional master's programs, global initiatives, and professional development at all levels.	07/2024 - present
Associate Dean for Graduate Programs (Ph.D. and Master's), School of Engineering and Applied Science, University of Pennsylvania. Served as Associate Dean for Master's and Professional Programs for first 2.5 years	01/2018 – 06/2024
Director of Penn Distributed Systems Lab (DSL)	01/2019 – 08/2024
RCA Professor (primary), Computer and Information Science (CIS) Department**,** University of Pennsylvania	06/2017 – present
Professor (secondary), Electrical and Systems Engineering (ESE) Department, University of Pennsylvania	06-2017 – present
Executive Advisor to CEO/CTO, Frontiir Inc (following Termaxia acquisition)	03/2020 – 02/2024

PREVIOUS APPOINTMENTS

CIS Master's Chair and CIS Master's Program Director, University of Pennsylvania	07/2015 – 12/2018
Associate Professor (secondary), ESE Department, University of Pennsylvania	10/2015 – 06/2017
Co-founder and Chief Scientist of high-performance data storage company Termaxia. Acquired by Frontiir Inc.	01/2016 – 03/2020
Associate Professor (primary), CIS Department**,** University of Pennsylvania	07/2013 – 06/2017
Co-founder and Lead Scientist of cloud analytics company Gencore (rebranded as Netsil). Acquired by public cloud company Nutanix Inc. (NTNX)	05/2013 – 03/2018
Assistant Professor**,** CIS Department**,** University of Pennsylvania	01/2007 – 06/2013
Post-doctoral Researcher**,** Microsoft Research Silicon Valley	07/2006 – 12/2006

EDUCATION

University of California at Berkeley 2006
Ph.D. in Computer Science
Thesis: *The Design and Implementation of Declarative Networks*
Advisors: Joseph M. Hellerstein and Ion Stoica.
Winner of the 2007 ACM-SIGMOD Dissertation Award
Winner of the 2006 David J. Sakrison Memorial Prize (UC Berkeley)

Stanford University 2000
Master's of Science in Computer Science (MSCS).
GPA: 4.0 / 4.0

University of California at Berkeley 1999
B.S. (Highest Honors) Electrical Engineering and Computer Science.
GPA: 4.0 / 4.0
9 A+s in technical courses (computer science, engineering, mathematics, and physical science)

UNIVERSITY SERVICES AND LEADERSHIP

Academic Leadership Roles

- **Senior Associate Dean**, Penn Engineering 07/2024 – present
  Oversee all graduate and professional educational initiatives, including doctoral programs, on-campus and online professional master's programs (5,500 students), global initiatives, engineering entrepreneurship, and professional development at all levels.
- **Associate Dean of Graduate Programs**, Penn Engineering 01/2018 – 06/2024
  Oversaw all Ph.D. and master's programs in Penn Engineering.
- **Master's Chair**, Computer and Information Science Department 07/2015 – 12/2017
  Oversaw all CIS-affiliated master's programs: Master of Computer and Information Technology, Computer and Information Science, Embedded Systems, Robotics, and Computer Graphics and Game Technology.

University and School Committees

- **Provost Technology Planning Council** 2026 – present
  Appointed by the Provost and Executive Vice President to the university's primary governing body for enterprise technology strategy, investments, and cybersecurity posture. The council oversees major program approvals and aligns cross-institutional IT priorities across academic, research, and administrative domains.
- **First Penn Experience Working Group** 2026
  University-wide initiative led by senior Penn leadership to enhance undergraduate and graduate/professional student engagement, belonging, and academic experience across schools and programs.
- **Penn Forward Graduate and Professional Programs Working Group** 2025
- **Penn Medicine Strategic Planning Committee** 2023
- **Teaching and Research Faculty Policy Reevaluation Committee** 2015
  Outcome: creation of the Professor of Practice teaching track at Penn Engineering.

Curriculum Steering Committees

- **Computer Engineering (CMPE) Curriculum Steering Committee** 2014 – present
- **Jerome Fisher M&T Academic Steering Committee** 2018 – present

Inter-School Search Committees

- **Chair, Professor of Practice in Innovation and Entrepreneurship Search** 2024
  Led the school-wide search, including candidate screening and interviews; resulted in hiring Prof. of Practice Dr. Brian Halak and part-time lecturers Liz Golden and Steven Weiner.
- **Professor of Practice in Entrepreneurship Search** 2017
  Resulted in hiring Prof. of Practice Dr. Vanessa Chan.
- **Jerome Fisher M&T Director Search** 2016
  Resulted in hiring Prof. Gad Allon as M&T Director.

Student Entrepreneurship and Global Outreach

- **Faculty Adviser, Jerome Fisher M&T Innovation Fund** 2015 – 2020
  Advised the fund supporting Penn student-led startups.
- **Mentor, NUS College in Bio Valley** 2008 – 2013
  Undergraduate work-study exchange program between Penn Engineering and the National University of Singapore (NUS) that promotes entrepreneurship by having undergraduates work at a startup first-hand while taking classes at Penn.

- **Organizer, Penn Engineering Virtual Research Seminar** 2022
  Seminar series on emerging research technologies featuring engineering faculty, organized in collaboration with the Penn Wharton China Center; attracted ~2,000 attendees per virtual event.

KEY HIGHLIGHTS AS ASSOCIATE DEAN AND SENIOR ASSOCIATE DEAN (2018 – PRESENT)

1,300 → ~5,500	600+ → ~1,000	15	40+
Professional master's students, 2018–2026	Ph.D. students, 2019–2026	New degrees, pathways, and credentials launched	Faculty teaching in online master's programs

Strategy and Growth

- **Graduate enrollment, revenue, and research expansion.** Grew Penn Engineering's professional master's programs from 1,300 students (2018) to approximately 5,500 (2026), and the Ph.D. population from 600+ (2019) to close to 1,000 (2026). Professional master's revenue growth supported several research and educational initiatives at Penn Engineering.
- **2030 Strategic Plan, Education Pillar.** Co-led Penn Engineering's Strategic Plan (Education Pillar), directing Ph.D. curriculum reforms, integrated master's-to-Ph.D. pathways, and experiential learning programs. Spearheaded growth across master's education by launching new professional degrees (MSE-SSC, MESE, MSE-TI) and online stackable credentials (AM Online) to strengthen institutional sustainability.

New Degree Programs, Pathways, and Credentials

Led the conceptualization and creation of the following school-wide programs:

ONLINE MASTER'S DEGREES	
MCIT Online (now MAS-CS)	The first online computer science master's degree offered by any Ivy League university, designed for students without prior CS experience. Later rebranded as Master of Applied Science in Computer Science (MAS-CS).
MSE-DS Online	Online Master's in Data Science, delivered jointly by Computer Science and Electrical & Systems Engineering faculty.
MSE-AI Online	The first online Artificial Intelligence master's program among Ivy League institutions, for learners with a computer science background.
MSE-TI Online	Master of Science in Engineering in Technology and Innovation, combining advanced engineering coursework with product development, entrepreneurship, engineering economics, intellectual property, and technology ethics. Prepares engineers to move technologies from concept to implementation, with concentrations in Artificial Intelligence, Data Science, and Software Systems & Cybersecurity.
RESIDENTIAL AND DUAL DEGREES	
MSE-SSC (residential and online)	Master of Science in Engineering in Software Systems and Cybersecurity, integrating advanced software systems and cybersecurity training with an emphasis on security-by-design; prepares engineers to build, defend, and lead complex digital infrastructure.
Wharton–Penn Engineering Dual Degrees	Penn Wharton MBA dual degrees with the MSE in Data Science and with the Master of Science in Engineering in Energy and Sustainability (MESE), expanding on existing Wharton collaborations with MCIT, Systems Engineering, and Integrated Product Design.

Research Master's Programs (CIS, ESE, BE)	Created research master's degrees in Computer and Information Science, Electrical and Systems Engineering, and Bioengineering, giving Ph.D. students who leave the doctoral program an accelerated pathway to a master's degree that counts the research work they have completed.
ACCELERATED AND EXPERIENTIAL PATHWAYS	
Accelerated Master's Programs	Penn undergraduates earn a Penn Engineering master's degree alongside their bachelor's degree, with three double-counted classes.
Accelerated Master's Online Pathway	Qualified Penn undergraduates begin coursework toward a Penn Engineering Online master's degree while completing their bachelor's degree, with eligible coursework counting toward graduate-degree requirements.
Doctoral Academic Field Studies	Ph.D. students undertake industry work aligned with their dissertation research during the academic year while continuing doctoral research and degree progress. Penn Engineering now permits research-aligned full-time internships during the Fall and Spring semesters with advisor approval.
Master's Academic Field Studies	Second-year master's students complete a six-month industry internship as part of their academic training.
CERTIFICATES AND COURSES	
Ph.D. Technology Commercialization Certificate	School-wide certificate enabling Ph.D. students to explore the real-world translation of their dissertation research through technology-commercialization coursework, industry mentorship and engagement, and industry perspectives in doctoral training.
Online Graduate Certificates	Software fundamentals, data science, artificial intelligence, and software systems.
Cross-School Online Credentials	Graduate Certificate in Computer Science Fundamentals for Perelman School of Medicine Health Care Innovation master's students, and Graduate Certificate in Health Care and Technology for MCIT Online students.
Professional Development Graduate Course	Master's-level course taken annually by hundreds of professional master's students across programs, covering job search skills, entrepreneurship, and research exposure.

Governance and Institutional Leadership

Work closely with academic leaders, faculty, staff, and students across the Engineering School and University to drive initiatives, develop policies, and support organizational effectiveness.

- **School leadership.** Chair the Graduate Administrative Committee (GAC) of 6 graduate group chairs and the Master's Administrative Committee (MAC) of 22 program directors, guiding decisions on graduate policies, academic operations, and program governance.
- **University liaison.** Serve on the Council of Graduate Deans and the Council of Professional Master's Deans, collaborating with the Vice Provost for Education to shape university-wide graduate policies and operational frameworks.
- **Graduate student leadership.** Chair the Dean's Doctoral Advisory Board and the Engineering Master's Advisory Board (EMAB), ensuring student input informs school-wide decisions, policies, and student experience initiatives.
- **Academic staff management.** Oversee a combined staff team across the Office of Academic Services and the Office of Academic Innovation, responsible for admissions, graduate student administration, academic support services, and strategic operations.

- **Faculty oversight and recruitment.** Oversee program directors and course staffing; built a teaching faculty of 40+ from engineering, business, law, medicine, and industry for online master's programs, ensuring instructional quality and operational scalability.
- **Penn Engineering Faculty Leadership Forum.** Co-founded and co-organize a cross-departmental forum fostering peer mentorship, leadership development, and collaborative exchange among engineering faculty, with interactive sessions on Ph.D. mentoring, large-scale research collaborations, and academic leadership.
- **Engineering entrepreneurship.** Partner with the Director and Vice Dean for Innovation & Entrepreneurship and faculty teams to define strategy, implement initiatives, and expand Penn Engineering's entrepreneurship and technology commercialization ecosystem.
- **Global initiatives.** Developed new partnerships and strengthened existing collaborations with ShanghaiTech University, VinUniversity, Plaksha University, and Ashoka University to support educational initiatives such as 4+1 BS-to-Accelerated Master's programs.

Student Success and Well-Being

- Launched the **Dean's Master's Scholarships** to enhance recruitment of students from diverse backgrounds and broaden pathways into graduate education.
- Hired the inaugural **Director of Graduate Student Programming** to strengthen academic support structures, improve retention, and assist students facing academic challenges.
- Established a **graduate student awards program** to formally recognize excellence among master's and Ph.D. students and elevate academic and research achievements.
- Implemented a **research support plan** for Ph.D. students experiencing research difficulties, improving persistence and degree progress.
- Engaged an **external wellness consultant** to run school-wide workshops and peer discussion groups, advancing mental health, community building, and resilience across Ph.D. cohorts.

Alumni, Donor, and Industry Engagement

- Regularly headline Penn Engineering alumni events across the SF Bay Area, Seattle, Beijing, Shanghai, Singapore, Shenzhen, Toronto, and other venues, and at company sites including Amazon, Apple, Google, and Microsoft.
- Worked with the business and development offices to consolidate several development funds into Ph.D. scholarships, meet donors, and steward donor fellowships for graduate students.
- Engage frequently with the Penn Engineering Board of Advisers, Penn Engineering Online Board of Advisers, Penn Engineering Technology Innovation and Entrepreneurship Board, and Penn Engineering Technology Advisory Board.

RESEARCH OVERVIEW

My research applies data-centric and formal methods to the design, analysis, and implementation of distributed systems, spanning networking, databases, security, operating systems, and programming languages. Current work focuses on adaptive Byzantine fault-tolerant consensus and permissioned blockchains, including learning-based protocol selection, order-fairness, and sharding; declarative smart contracts and their synthesis, verification, and optimization; resource disaggregation and data-intensive systems in cloud data centers; efficient serving of large language models; and verification and synthesis of network configurations and protocols. This work has appeared in more than 180 peer-reviewed publications and has received the Outstanding Paper Award at USENIX NSDI 2024, the Best Paper Award at EDBT 2020, and best-paper recognition at IEEE ICDE, ACM HPDC, and ACM ICAC. It has been supported by 36 external research awards from NSF, DARPA, ONR, and AFOSR, along with industry support from Google, AT&T, and Amazon Web Services. Research from my group led to two startups: Netsil, acquired by Nutanix in 2018, and Termaxia, acquired by Frontiir in 2020.

I have graduated 22 Ph.D. students and mentored 3 postdoctoral researchers, and currently advise 2 Ph.D. students along with numerous master's and undergraduate researchers. Former students and postdocs hold faculty positions at the University of Toronto, Stony Brook University, Illinois Institute of Technology, ShanghaiTech University, and City University of Hong Kong, and have earned tenure at Georgetown University and Temple University; others lead research and engineering at Microsoft Research, Meta, Google, and startups. Their dissertations have earned three Morris and Dorothy Rubinoff Awards, an honorable mention for the SIGMOD Jim Gray Doctoral Dissertation Award, and an honorable mention for the SPEC Distinguished Dissertation Award.

RESEARCH FUNDING

- **NSF IIS-2436080: EAGER: Synthesizing and Optimizing Declarative Smart Contracts,** (PI: Boon Thau Loo), $150K, 01/01/2025-12/31/2025
- **CNS Core: Small: Towards Internet-scale Permissioned Blockchain Infrastructure for the Mobile Internet,** NSF CNS Small (PI: Boon Thau Loo, co-PI: Mohammad Javad Amiri), $500K, 10/01/2021 – 09/30/2024
- **Secure Handling of Isolated Executables without Leaking (SHIELD),** under DARPA Guaranteed Architecture for Physical Security (GAPS) program. (Lead Penn PI: Boon Thau Loo, Nik Sultana). Subcontract to Perspecta Labs. $600K as Penn portion. 09/19 – 02/24.
- **Collaborative Research: CNS Core: Medium: Movement of Computation and Data in Splitkernel-disaggregated, Data-intensive Systems**, NSF CNS Medium (PI: Vincent Liu, co-PI Boon Thau Loo and Sebastian Angel), $900K, 2021-2024.
- **Dynamic Cost-Performance Optimizations in Multipath Video Delivery.** Google Research Award, $73,500, 2016.
- AT&T Labs-Research University Gift, $25K, 2014.
- **NeTS: Medium: Collaborative Research: Diagnosing Datacenter Networks with Quantitative Provenance**, co-PI with Andreas Haeberlen and Linh Phan, $900K, 2017 – 2023.
- **CCF: Medium: Enabling Real-Time Quantitative Decision Making over Streaming Data**, NSF CCF Medium (PI: Rajeev Alur, co-PIs Sanjeev Khanna, Zachary Ives, and Boon Thau Loo), $1.2M, 2018-2023.
- **ASPIRE: Automatically Subsetting Protocol Implementations Reliably and Efficiently,** ONR TPCP, co-PI with Mayur Naik, Rajeev Alur, Insup Lee, and Oleg Sokolsky, $6.1M, 2018 – 2022.
- **Accountable Protocol Customization, ONR TPCP,** Penn PI with Benjamin Pierce, Andre Scedrov and Steve Zdancewic. $7.5M (Penn's portion is $2.5M), subcontact to CMU, 2018 – 2022.
- **CSR Nets: Medium: Network Functions Virtualization with Timing Guarantees**, NSF CSR Medium (PI: Linh Thi Xuan Phan, co-PI: Andreas Haeberlen, Boon Thau Loo), $1.1 million, 09/16 – 08/21.
- **NeTS: Medium: Collaborative Research: DEFIND: Declarative Formal Interactive Network Design**, NSF NeTS Medium, (Penn PI: Boon Thau Loo, collaboration with CMU and Georgetown University). $1.2 million, 09/15 – 08/.
- **ProNet: Programmable Networks Enabled by Fast In-Path Analytics.** DARPA Dispersed Computing program, lead Penn PI, with Andre Dehon, Andreas Haeberlen, and Linh Thi Xuan Phan. Subcontract to Vencore, $12.5M, 01/17 – 04/21.
- **DeDOS: Declarative Dispersion-Oriented Software, DARPA Extreme DDoS Defense (XD3)**, (PI: Boon Thau Loo, co-PI: Andreas Haeberlen, Linh T.X. Phan, Micah Sherr, Clay Shields, Wenchao Zhou), $3.5 million with $800K options apprpved, 04/16 – 08/20.
- **DEDUCE: Distributed Enclave Defense Using Configurable Edges.** Joint project with ACS, Apogee Research, MIT, and Texas A&M university, DARPA EdgeCT, $1.17M, 07/2015-06/2018.
- **I-Corps: NetEgg: Toolkit for Programming Network Policies by Examples**, NSF IIP-1564730 (PI: Boon Thau Loo), $50K, 11/01/2015 – 04/30/2018.
- **Collaborative Research: Expeditions in Computer Augmented Program Engineering (ExCAPE): Harnessing Synthesis for Software Design**, NSF Expedition, with Rajeev Alur, Milo Martin, George Pappas, Steve Zdancewic (Penn) and several others, $3.75 million (Penn), 04/01/2012-03/31/2018.

- **Probalogical Hybrid Defense (PHD).** Office of Naval Research (ONR) grant, Jonathan M. Smith (PI), $1.09M, Rajeev Alur, Andre Dehon, Sampath Kannan, Boon Thau Loo, A. Rahklin, Andre Scedrov, Oleg Soloksly (co-Pis), 10/2014 – 09/2017.
- **NeTS: Small: Routing Design and Analysis with Incomplete Information**, NSF CNS-1218066, Boon Thau Loo (PI). $400K, 9/12-8/2017.
- **CSR: Small: Resource Management for Real-time Cloud Computing**, with Linh P.X. Phan and Insup Lee, $450K, 09/01/2011 – 08/31/2016.
- **TC: Medium: Collaborative Research: Tracking Adversarial Behavior in Distributed Systems with Secure Networked Provenance,** NSF TC-1065130, (PI: Andreas Haeberlen, Co-PI: Zachary Ives, Boon Thau Loo, Micah Sherr), $1.2 million, 09/01/2011 – 08/31/2016.
- **TC:Small: Collaborative Research: Towards a Formal Framework for Analyzing and Implementing Secure Routing Protocols**, with Limin Jia (CMU) and Wenchao Zhou, $499K, 3 years. 09/01/2011 – 08/31/2016.
- **CAREER: Towards a Unified Declarative Platform for Composable Verifiable Networks**, NSF CNS-0845552, (**PI: Boon Thau Loo**), $450,000, 06/01/2009 – 05/31/2016.
- **A Unified Algebraic and Logic-based Framework towards Safe Routing Implementations.** Air Force Office of Scientific Research (AFOSR) Young Investigator Program (YIP) award, $360K, 6/2012 – 6/2015.
- **SBIR Phase 1: Declarative Platform for Software-defined Networking Applications.** NSF IIP- 1345294, $150K (1/2014-12/2014), plus a $30K SBIR Phase 1B supplement. Technology transfer from NetDB@Penn research.
- **FIA: Collaborative Research: NEBULA: A Future Internet That Supports Trustworthy Cloud Computing,** NSF Future Internet Architecture, (PI: Jonathan M. Smith, Co-Pis from various universities), $1.47 million (Penn's award), 09/01/2010 – 31/08/2014.
- **Collaborative Research: Scalable Knowledge-based Middleware for Networked and Mobile Systems**, NSF CCF-0820208/0819845 (**PI: Boon Thau Loo**, Co-PI: William Regli from Drexel University), $499,866, 09/01/2008-08/31/2012.
- **AFOSR MURI: Collaborative Policies and Assured Information Sharing,** AFOSR grant number FA9550-08-1-0352, (Penn PI: Andre Scedrov, Co-PI: Boon Thau Loo), $850K (Penn's award), (2008-2013).
- **Selectable Anonymity for Enabling SAFER Telecommunications,** part of the DARPA SAFER program, (PI: Jonathan M. Smith, Co-PI: Matthew Blaze, Boon Thau Loo, Micah Sherr, Clay Shields), $3.3 million, 10/2011 – 09/2014.
- **CSR-EHCS(CPS) TM: Robust Composition and Interoperability of CPS Components**, NSF CSR-0834524. (PI: Insup Lee, Co-PI: Oleg Sokolsky, Boon Thau Loo, and Rahul Mangharam), $950,000, 09/01/2008-08/31/2011.
- **NGNI-Small: Declarative Secure Networked Information Systems,** NSF IIS-0812270 (PI: Boon Thau Loo), $450,000, 09/01/2008 – 08/31/2014.
- **Amazon Web Services (AWS)** in Education grant, 2011-2012.
- **Network Opposing Botnets (NoBot**), ONR N00014-09-1-0770, (PI: Jonathan M. Smith, Co-Pis from Princeton University and Harvard University, $2.2 million for three years, 2009 – 2012.
- **CT-S: Application-Aware Anonymity (A3) for the Masses**, NSF CNS-0831376. (PI: Boon Thau Loo, Co-PI: Matthew Blaze), $400,000, 09/01/2008-08/31/2011.
- **Policy-based Information centric Reliable Ad hoc Network (PIRANA)**, part of the Wireless Network After Next Program, sponsored by DARPA-STO AFRL #FA8750-07-C-0169, $245,391 (Penn's subcontract total), (10/2007 – 12/2008)
- **FIND: Wireless Knowledge Infrastructure (WiKI)**, NSF CNS-0721845, (PI: Boon Thau Loo, Co-Pis: Zachary Ives and Jonathan M. Smith), $235,300, (08/01/2007 – 07/31/2009).

SELECTED AWARDS AND HONORS

- ACM SIGMOD Distinguished Associate Editors List (2026)
- National Academy of Inventors (Class of 2025)

- International Student Advocate of the Year (ISAY), presented by the University of Pennsylvania International Student and Scholar Services (ISSS), 2024.
- Outstanding paper award, 21st USENIX Symposium on Networked Systems Design and Implementation (NSDI '24)
- IEEE Senior Member, 2023
- Lindback Award for distinguished teaching, 2022
- Ruth and Joel Spira award for excellence in teaching, 2021
- Best paper award, 23rd International Conference on Extending Database Technology (EDBT), 2020
- RCA Professor of Computer and Information Science, 2019
- Penn emerging inventor of the year award, 2018
- Google Research Award, 2016.
- One of five papers nominated for the best paper award at ACM CoNEXT 2015
- Selected best papers of the 22nd ACM High Performance and Distributed Computing (HPDC), 2013
- Air Force Office of Scientific Research (AFOSR) Young Investigator Program (YIP) award, 2012
- Honorable mention for best demonstration competition in SIGMOD 2009.
- Selected best papers of the 25th International Conference on Data Engineering (ICDE), 2009
- NSF's Faculty Early Career Development (CAREER) Award, 2009
- ACM SIGMOD Dissertation Award, 2007
- UC Berkeley David J. Sakrison Award made annually to a graduate student who has completed what is deemed by a faculty committee to be a truly outstanding piece of research, 2006
- Computing Research Association (CRA) Outstanding Undergraduate Awards (Honorable mention), 1999

SELECTED AWARD AND HONORS (BY MY DOCTORAL STUDENTS WHILE AT PENN)

- Morris and Dorothy Rubinoff Award for best dissertation in the CIS department at the University of Pennsylvania
  - Qizhen Zhang (2022)
  - Benhaz Arzani (2017)
  - Micah Sherr (2009)
- Outstanding paper award, 21st USENIX Symposium on Networked Systems Design and Implementation (NSDI '24) – Chenyuan Wu
- Best paper award, 23rd International Conference on Extending Database Technology (EDBT), 2020 - Hui Lyu
- Runner-up award, ACM SIGCOMM 2020 Networking Women Professional Development Workshop (N2Women), Aug 2020. – Heena Nagda
- 1st prize at ACM Student Research Competition at SIGCOMM'17 – Henri Max Demoulin
- Honorable Mention for SPEC Distinguished Dissertation Award (2014) – Zhuoyao Zhang
- Honorable Mention for SIGMOD Jim Gray Doctoral Dissertation Award (2013) – Wenchao Zhou.
- Best student paper award, 9th ACM International Conference on Autonomic Computing (ICAC), 2012. – Zhuoyao Zhang
- Runner-up at ACM Student Research Competition at SIGCOMM'11 – Wenchao Zhou

TECHNOLOGY TRANSFER AND ENTREPRENEURSHIP LEADERSHIP

- Termaxia (10/2015 – 4/2020)
  - Founding Chief Scientist of exabyte-scale data storage platform company
  - Raised seed round from City of Philadelphia (Startup PHL), Ben Franklin Technology Partners and angel investors.
  - Enterprise customers in US, China, and Southeast Asia.

  - **Acquired by Frontiir Inc, one of the fastest growing technology companies in Southeast Asia.** Served as executive adviser to CEO and CTO at Frontiir Inc post acquisition
- Gencore/Netsil Inc. (5/2013 – 3/2018)
  - Co-founder and Lead Scientist role on a cloud-based microservices analytics company, commercializing research on declarative network analytics (2007-2013)
  - Served as PI on National Science Foundation Small Business Innovation Research (SBIR) funding; supported early fundraising, including seed funding from Startup PHL and angel investors; the company later raised Series A institutional financing.
  - **Company acquired by Nutanix Inc. (NTNX) in March 2018 for approximately US$67.5 million.**

STUDENTS AND POST-DOCS

Current PhD Students:

- Lan Lu (5th year)
- Issac Yang (1st year)

Graduated Ph.D. Students and Postdocs

1. **Dr. Tao Luo (with Vincent Liu)**
   Apple (2026)
   Thesis: Distributed Systems for Resource-Efficient Large Language Model Serving, 2026.
2. **Dr. Gerald Whitters**
   Lockheed Martin (2026)
   Thesis: Leveraging SMT Solvers for Reachability Analysis, Jun 2026.
3. **Dr. Alyssa Hwang (with Andrew Head)**
   Artefact (2026)
   Thesis: User Interfaces for Fine-grained Integration of Information, Dec 2025.
4. **Dr. Bhavana Mehta (with Mohammad Javad Amiri)**
   Member of Technical Staff at Zphyra AI
   Thesis: Adaptive Sharding and Fault Tolerance in Distributed Systems, Dec 2025
5. **Dr. Heena Nagda (with Mohammad Javad Amiri)**
   Research Scientist at Meta
   Thesis: Data-dependent Order Fairness in BFT Consensus, Oct 2025
6. **Dr. Chenyuan Wu**
   Assistant Professor at City University of Hong Kong
   Thesis: AI-driven Adaptive Distributed Systems in Untrusted Environments, Dec 2024
7. **Mohammad Javad Amiri (postdoc from University of California at Santa Barbara)**
   Assistant Professor at Stony Brook University (2023)
8. **Dr. Haoxian Chen**
   Assistant Professor at ShanghaiTech University
   Thesis: Program Synthesis for Declarative Systems, Feb 2023
9. **Dr. Qizhen Zhang (with Vincent Liu)**
   Assistant Professor at University of Toronto (2023)
   Microsoft Research postdoc (2022)
   Thesis: Hyperscale Data Processing with Network-centric Designs, Aug 2022
   Morris and Dorothy Rubinoff Award for best computer science dissertation at the University of Pennsylvania
10. **Dr. Lei Shi (with Rajeev Alur)**
    Huawei
    Thesis: Practical Network Programming Automation, May 2022

11. **Nicholai Sultana (postdoc from Cambridge University)**
    Assistant Professor at Illinois Institute of Technology (2021)
12. **Max Demoulin (co-advise with Linh Phan)**
    First employment: Senior software engineer at Astronomer. Currently at DBOS Inc. as founding engineer (2023)
    Thesis: Service Boosters: Library Operating Systems for the Data Center, May 2022
13. **Behnaz Arzani (co-advise with Roch Guerin).**
    First employment: Post-doctoral researcher at Microsoft Research (2017)
    Currently Principal Researcher at Microsoft Research
    Thesis: Improving Network Performance Through Endpoint Diagnostics and Multipath Communications, 2017
    Morris and Dorothy Rubinoff Award for best computer science dissertation at the University of Pennsylvania
14. **Chen Chen (co-advise with Limin Jia).**
    Researcher at Megagon Labs
    Thesis: Unifying Static and Runtime Analysis in Declarative Distributed Systems, 2017.
15. **Yang Li (co-advise with Sanjeev Khanna).**
    Software engineer at Meta
    Thesis: Computing with Distributed Information, May 2017.
16. **Yifei Yuan (co-advised with Rajeev Alur)**
    First employment: Post-doctoral researcher at Carnegie-Mellon University. Currently at Alibaba (2020).
    Thesis: High-level Abstractions for Programming Network Policies, Aug 2016.
17. **Mengmeng Liu (co-advised with Zachary Ives)**
    Principal Product Manager at WalmartLabs
    Thesis: Incremental Processing and Optimization of Update Streams, May 2016.
18. **Dong Lin**
    First employment as Software engineer at LinkedIn. Currently at ByteDance (2023).
    Thesis: Scalable Anonymous Group Communication, May 2015.
19. **Alex Gurney (postdoc)**
    First employment: Senior software engineer at Comcast, 2014. Currently at Slack (2023)
20. **Zhuoyao Zhang (co-advised with Insup Lee)**
    Software engineer at Google.
    Thesis: Performance Modeling and Resource Management for MapReduce Applications, May 2014.
    SPEC Distinguished Dissertation Award (Runner-up), 2014
21. **Anduo Wang (co-advised with Andre Scedrov)**
    Post-doctoral researcher at the University of Illinois, Urbana-Champaign (2013-2016)
    Tenure-track Assistant Professor at Temple University (2016)
    Currently: Tenured Associate Professor at Temple University (2023)
    Thesis: Automated Formal Analysis of Internet Routing Systems, Aug 2013.
22. **Wenchao Zhou**
    Tenured Associate Professor at Georgetown University. Currently at Alibaba (2021)
    Thesis: Secure Time-aware Provenance towards Forensics in Distributed Systems, Aug 2012.
    Jim Gray SIGMOD Doctoral Dissertation Award (Runner-up), 2013
23. **Changbin Liu**
    First employment: AT&T Labs Research (2012-2015)
    Founding CEO/CTO of Termaxia (acquired by Frontiir Inc.) (2015 – 2020).
    VP Engineering of Frontiir Inc. (2020) after acquisition
    Thesis: Transactional Automated Cloud Resource Orchestration, Aug 2012

24. **Micah Sherr (co-advised with Matt Blaze)**
    Callahan Family Professor at Georgetown University.
    Thesis: Coordinate-Based Routing for High Performance Anonymity, Aug 2009.
    Morris and Dorothy Rubinoff Award for best computer science dissertation at the University of Pennsylvania
25. **Yun Mao (co-advised with Jonathan M. Smith)**
    AT&T Labs Research (2008-2012), Meta (2012)
    Thesis: A Unified Data-centric Approach towards an Extensible Internet Architecture, Aug 2008.

Highlighted Master's Research Students (several with publications):

- **2024** Neelesh C A (Canopy), Prashanth S Iyer (ASML), Zhenping Khor (Penn CIS PhD student), and Brendan Massey (UNC Chapel-Hill PhD student).
- **2022** Shubhendra Pal Singhal (Georgia Tech Ph.D. student)
- **2021** Stephen Carrasquillo (Extron), Heena Nagda (Penn PhD student), Rakesh Nagda (Amazon), Saket Saket (6sense), Junyong Zhao (University of Arizona)
- **2020** Shivani Burad (Apple), Nishanth Shyamkumar (Frontiir Inc.), Henry Zhu (Amazon), Garvit Khandelwal (Microsoft), Manqiu Zhang (Amazon), Ritika Gupta (Meta), Ritvik Sadana (Qualcom), Hui Lyu (PwC Beijing)
- **2019** Nishant Prabhu (Nutanix), Deepika Vasudevan (Amazon), Shilpi Bose (VMware)
- **2018:** Akash Acharya, Shilpi Bose, Anirudh Chelluri (Meta), Mark Lippincott (Netflix), Nishant Prabhu, Achala Rao (Bloomberg), Bowen Wang.
- **2017:** Anupam Alur (Bloomberg), Siri Anil (Bloomberg), Robert Dimaiolo (Cognescent), Harshal Lehri (Google), Sajal Marwaha, Chirag Shah (Real time Innovations), Hitali Sheth, Akshay Sriraman (Bloomberg), Prahalad Venkataramanan, Harsh Verma.
- **2016:** Jitesh Gupta, Nicholas Iodice (Audible), Ankit Mishra (MSc. 2016, Microsoft), Sudarshan Muralidhar (MSc. 2016, Igneous), Prithvi Kapara (MSc. 2016), Anand Sriramalu (Oracle), Shanni Xi (Qualcomm)
- **2015:** Jatin Sharma (Taser Inc.), Nikhilesh Behera (Taser Inc.), Sibi Vijayakumar (GitStar), Rahul Nafde (ColdLight), Sonal Ektaa (Goldman Sachs),
- **2014:** Sitian Cheng (Box Inc.), Tanveer Gill (Netsil), Bo Li (Google), Anh Nguyen (Netsil), Eric Xiang (Yahoo Inc.),
- **2013:** Shuotian Cheng (Amazon), Sanchit Aggrawal (Microsoft), Harjot Gill (Netsil), Xianglong Han (Oracle), Lohit Sarna (Intel), Hao Xu (Google), Yuankai Zhang (Ph.D. program at Georgetown University)
- **2012:** Yiqing Ren (Georgetown University), Suyog Mapara (Microsoft). Saravana Soundararajan (Oracle), Sangeetha A Jyothi (UIUC Ph.D. in Computer Science),
- **2011:** Ren Lu (Bank of America), Taher Saeed (DramaFever), Qiong Fei (Amazon), Qi Zheng (Microsoft),
- **2010:** Saumya Jain (Microsoft), Xiaozhou Li (Princeton Ph.D. in Computer Science, Barefoot Networks), Shivkumar Muthukumar (Amazon), Tao Tao (Microsoft),
- **2008:** Ricardo Correa (Google)

Highlighted Undergraduate Research Students:

- Haoyun Qin (BSc. 2025). CRA Outstanding Undergraduate Award honorable mention. 2005 John Grist Brainerd Award winner. Co-author of VLDB 2024 paper.
- Jared Asch (BSc. 2023) : Co-author of VLDB 2022 paper. CIS appreciation award.
- Andrew Zhao (BSc. 2023): Co-author of IEEE/ACM Transactions on Networking (ToN), 2022. CIS appreciation award. Currently Princeton University as Ph.D. student.
- Siddharth Sankhe (BSc. 2021): Co-author of SIGMOD 2026, SOCC 2025, SIGMOD 2022 papers.
- Zhilei Zheng (BSc. + MSc. 2021): Co-author of ACSAC 2022 and SIGMOD 2022 paper. Ph.D. program in Computer and Information Science at University of Pennsylvania (2021)
- Liana Patel (BSc. 2021). Ph.D. program in Computer Science at Stanford University (2021).
- Henry Zhu (MSc. 2020, BSc. 2019). Ph.D. program in Computer Science at University of Illinois at Urbana-Champaign (2022).. Winner of Master's Outstanding Research award (2020)

- Simran Arora (BSc. 2019). Co-author of SIGMOD 2019 paper. Ph.D. program in Computer Science at Stanford University (2019). Caltech Assistant Professor (2026)
- Meryem Essaidi (BSc. 2016). Co-author of CIKM 2017 paper. Ph.D. program in Computer Science at Princeton University (2017).
- Jinyan Cao (B.Sc. 2014). Participated in ACM SIGCOMM'12 demonstration.
- Kenton Lee (B.Sc. 2014). Ph.D. program in Computer Science at University of Washington-Seattle (2014). Participated in ACM SIGCOMM'12 demonstration.
- Robert Mead (B.Sc. 2014). Participated in ACM SIGCOMM'12 demonstration.
- Trisha Kothari (B.Sc. 2014). Co-author of DAMP (POPL) 2012 workshop paper. Winner of the Microsoft Undergraduate Scholarship, 2012-2013.
- Sandy Shengzhi Sun (B.Sc. 2013). Co-author of SIGMOD 2011 demonstration. Winner of the Microsoft Undergraduate Scholarship, 2011-2012.
- Cam Nguyen (B.Sc. 2012). Co-author on Scalanytics paper at HPDC 2012. Co-founder at Gencore/Netsil, spinoff from NetDB@Penn research group (acquired by Nutanix Inc.)
- Cheng Luo (B.Sc. and MSc 2012). Co-author of FORTE 2014. Ph.D. program at Harvard University in Finance (2012)
- Andrew Quishi Mao (B.Sc. 2009). First author of NDSS 2010 paper. Ph.D. program in Computer Science at Harvard University (2009)
- William Marczak (B.Sc. 2009). First-author of SIGMOD 2010 and NDSS 2010 papers. Honorable mention for the CRA Outstanding Undergraduate 2009. University of Pennsylvania SEAS Computer Science Academic Award, 2009. Ph.D. program in Computer Science at the University of California-Berkeley (2009)

UNDERGRADUATE SENIOR PROJECTS AND CAPSTONE PROJECTS MENTORED

- 2023: 7 senior design teams (one winner of CS Impact award and one winner for Societal Impact award. One team chosen to represent CIS in school-wide competition)
- 2022: 1 capstone and 6 senior design teams (one winner for most technically challenging project)
- 2021: 2 senior design teams (one winner of best creativity award)
- 2020: 3 BAS capstone projects, and 1 senior design team (winner of alumni's choice award)
- 2019: 2 capstone projects, and 2 senior design teams (honorable mention for senior design competition)
- 2018: 5 senior design teams, including first prize for senior design competition, honorable mention for senior design competition, finalist for M&T senior design competition, and runner-up for school-wide competition.
- 2017: 2 capstone projects, and 3 senior design teams, including one honorable mention for senior design competition.
- 2016: 2 capstone projects, and 2 senior design teams (1st and 2nd place for CIS senior design competition)
- 2015: 2 senior design teams (honorable mention for CIS senior design competition)
- 2014: on sabbatical leave and did not supervise any teams
- 2013: 7 senior design teams (1st prize and honorable mention for CIS senior design competition. Runner-up for school-wide competition.)
- 2012: 3 senior design teams (3rd prize and honorable mention for CIS design competition)
- 2011: 1 senior design team (honorable mention for senior design project competition)
- 2010: 1 senior design team
- 2009: 3 senior design teams, including SIGMOD 2010 and NDSS 2010 papers, and 3rd prize for senior design project competition (project directly contributed toward a SIGCOMM 2009 demonstration.)

UNDERGRADUATE STUDENT ACADEMIC ADVISING

- As a faculty adviser, I primarily focus on advising undergraduate M&T students majoring in Wharton and Computer Science, and our Computer Engineering program. I am passionate about undergraduate advising, and take on many undergrad advisees, ranging round 40-60 students annually.

DISSERTATIONS /THESIS COMMITTEES

Chair of thesis committee:

- Karan Newatia (adviser: Andreas Haeberlen and Linh Phan), 2026
- Peizhi Wu (adviser: Zachary Ives and Ryan Marcus), 2025
- Xinyi Chen (advisor: Vincent Liu), 2025
- Liangcheng Yu (advisor: Vincent Liu), 2024
- Kelly Shiptoski (adviser: Joseph Devietti), 2022
- Nofel Yaseen (advisor: Vincent Liu), 2022
- Shaanan Cohney (advisor: Jonathan M. Smith and Nadia Heninger), 2019
- Alex Marder (advisor: Jonathan M. Smith), 2019
- John Sonchack (advisor: Jonathan M. Smith), 2019
- Ang Chen (advisor: Andreas Haeberlen), 2017
- Antonis Papadimitriou (advisor: Andreas Haeberlen), 2017
- Yang Wu (advisor: Andreas Haeberlen), 2017
- Bongho Kim (adviser: Insup Lee), 2016
- Mingchen Zhao (adviser: Andreas Haeberlen), 2016
- Shaohui Wang (adviser: Insup Lee and Oleg Sokolsky), 2015
- Arjun Ravi Narayan (advisor: Andreas Haeberlen), 2015
- Jian Chang (advisor: Insup Lee and Sampath Kannan), 2013
- Svilen Mihaylov (advisor: Zachary Ives), 2012
- Adam Aviv (advisor: Jonathan M. Smith and Matt Blaze), 2012
- Nicholas Taylor (advisor: Zachary Ives), 2010
- Grigoris Karvounarakis (advisors: Zachary Ives and Val Tannen), 2009

Member of PhD. thesis committee:

- Soonbo Han (adviser: Zachary Ives)
- Yifan Cai (adviser: Linh Phan), 2026
- Robert Gifford (adviser: Linh Phan and Andreas Haeberlen), 2025
- Nick Rioux (adviser: Steve Zdancewic), 2025
- Kelvin Ng (adviser: Vincent Liu), 2025
- Haoran Zhang (adviser: Sebastian Angel and Vincent Liu), 2024
- Serene Assi (adviser: Robert Mauck), 2024
- Ziliang Lai (advisor: Eric Lo from Chinese University of Hong Kong), 2023 – external committee member
- Jiachi Zhang (advisor: Wenchao Zhou from Georgetown University), 2023 – external committee member
- Yuanlong Xiao (adviser: Andre Dehon), 2023
- Jialiang Zhang (adviser: Jing Li), 2023
- Pardis Pashakhanloo (adviser: Mayur Naik), 2022
- Yi Zhang (adviser: Zachary Ives), 2022
- Yishuai Li (adviser: Benjamin Pierce), 2022
- Omar Navarro Lejia (advisor: Joseph Devietti), 2022

- Joel Hypolite (advisor: Jonathan M. Smith), 2022
- Nan Zheng (advisor: Zachary Ives), 2021
- Bai Ran (advisor: Eric Lo from Hong Kong Polytechnic University), 2019 – external committee member
- Luke Valenta (advisor: Jonathan M. Smith and Nadia Heninger), 2019
- Nikos Vasilakis (advisor: Jonathan M. Smith), 2019
- Nan Zheng (advisor: Zachary Ives), 2019.
- Yuankai Zhang (advisor: Wenchao Zhou), 2019
- Tavish Vaidya (advisor: Micah Sherr), 2018
- Christian DeLozier (advisor: Joseph Devietti), 2018
- Gaurav Shah (advisor: Matthew Blaze), 2009
- Arvind Easwaran (advisors: Insup Lee and Oleg Sokolsky), 2008

Member/chair of WPE-II (research qualifier) committee:

- Karan Newatia, 2025 (Chair), Peizhi Wu, 2025 (Chair); Lan Lu, 2024; Yifan Cai, 2024; Bhavana Mehta, 2023; Gerald Whitters, 2023; Heena Nagda, 2023; Zhilei Zheng, 2023; Liangcheng Yu, 2022; Xinyi Chen, 2022; Chenyuan Wu, 2021; Soonbo Han, 2021; Phillip Hilliard, 2021; Liangcheng Yu, 2021 (Chair); Edo Roth, 2019 (Chair); Omar Navarro Leija, 2019 (Chair); Haoxian Chen, 2019; Joel Hypolite, 2016 (Chair); Kyle Super, 2016 (Chair); Antonis Papadimitriou, 2016 (Chair); John Sonchack, 2014 (Chair); Yang Wu, 2014 (Chair); Nimit Singhania, 2014 ; Mingchen Zhao, 2014 (Chair); Shaohui Wang, 2012.; Zhuoyao Zhang, 2012; Jian Chang, 2011; Changbin Liu, 2009; Svilen Mihaylov, 2009 (Chair); Eric Cronin.2009; Rafi Rubin, 2009; Karl Mazurak, 2008; Nichoas Taylor, 2008. (Chair); Gaurav Shah, 2008; Aaron Bohannon, 2008; Micah Sherr, 2007.

Master's thesis supervision:

- Sanchit Aggrawal, 2013 (advisor); Dhruv Arya, 2013 (committee member); Yuankai Zhang, 2013 (advisor); Dong Lin, 2012 (advisor); Saravana Soundararajan, 2012 (advisor); Prakashkumar Thiagarajan (committee member); Sumanth Mysore Sathyanarayana, 2012 (committee member); Geetika Vasuedeo, 2011 (committee member); Ruchir Jha, 2010 (committee member).

TEACHING EXPERIENCE

COURSE	TERMS TAUGHT
Current Teaching	
CIS 4000 / 4010 Senior Design Year-long capstone sequence. Average evaluations: CIS 4000 3.12/4 (course), 3.50/4 (instructor); CIS 4010 3.17/4 (course), 3.57/4 (instructor).	Every Fall and Spring, Fall 2023 – Spring 2027
CIT 5950 Computer Systems Programming Online; core MCIT Online course. Average evaluations: 2.91/4 (course), 3.31/4 (instructor).	Every Fall, Spring, and Summer since Fall 2019
CIS 5530 / TCOM 5120 Networked Systems Advanced undergraduate / master's networking; created the on-campus version (2007) and the online version (2022). Average evaluations: 3.11/4 (course), 3.27/4 (instructor).	Online: every Fall, Spring, and Summer since Spring 2022 On campus: Fall 2007, Fall 2008, Fall 2009, Fall 2010, Spring 2012, Spring 2013
Previous Courses	
CIS 5480 Operating Systems Design and Implementation Graduate-level, project-intensive operating systems. Average evaluations: 3.47/4 (course), 3.58/4 (instructor).	Spring 2017, 2018, 2019, 2020, 2021, 2023

COURSE	TERMS TAUGHT
CIS 3800 Operating Systems Required undergraduate junior/senior course. Average evaluations: 2.98/4 (course), 3.16/4 (instructor).	Fall 2011, 2012, 2013, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
CIS 5050 Software Systems Core advanced undergraduate / master's distributed systems course.	Spring 2008, 2009, 2011, 2015, 2016
CIS 8000 Software Defined Data Centers Graduate seminar on SDN, NFV, and storage and compute virtualization; reviewed papers from networking and systems conferences; guest speakers from Brocade, Comcast, and Juniper Networks.	Fall 2015
PREC 712.001 Introduction to Computer Science and Entrepreneurship Preceptorial seminar for Penn Engineering and Wharton students on computer science startups: fundraising, go-to-market strategy, customer discovery, and lean startup methods.	Fall 2014, Fall 2015
CIS 8000/003 Rigorous Internet Protocol Engineering Research seminar at the intersection of formal methods and networking.	Fall 2011
CIS 19X Mini-Courses in Programming Organized the popular CIS mini-courses in C#, C++, Haskell, Python, Unix, iPhone, Ruby on Rails, and more.	Fall 2009 – Fall 2013
CIS 7000/005 Networking Meets Databases Research seminar at the intersection of databases and networking.	Spring 2007

COURSEWORK DEVELOPMENT

URL: https://boonloo.cis.upenn.edu/about/teaching/

ONLINE AND PROFESSIONAL MASTER'S	
CIT 5950 **Computer Systems Programming** Core course, MCIT Online	Core systems course for the MCIT Online program. Roughly three-quarters of the term covers operating systems (processes, threads, inter-process communication, traps and interrupts, scheduling, virtual memory, and file systems); the final quarter introduces networked systems, the Internet, and network programming. Students write C programs that use system calls, manage processes and threads, handle signals, and communicate over the network.
CIS 5530 / TCOM 5120 **Networked Systems** Created; online version 2022	Created this advanced undergraduate and graduate course, cross-listed with TCOM, and grew enrollment from 34 (Spring 2008) to 107 (Spring 2012); a version was later developed for MCIT Online in 2022. Student teams build routing protocols and a Chord distributed hash table, demonstrated on a cluster using the ns-3 simulator, then a peer-to-peer keyword search engine on top of Chord, modeled on the original SIGCOMM paper. Work from the course led to the PennSearch paper at the SIGCOMM Education Workshop.
UNDERGRADUATE CORE AND CAPSTONE	
CIS 3800 **Operating Systems** Required core course	Created a new project sequence built around PennOS, in which students implement a complete user-space operating system; the design was published in ACM SIGOPS Operating Systems Review. Course evaluations and enrollment have reached their highest levels in the three years since CIS 381 was decoupled.

CIS 4000 / 4010 **Senior Design Project Sequence** Course leader	Lead the year-long capstone in which students propose, design, and build a substantial project in software, hardware, or theory. The fall course (CIS 4000) requires an adviser-approved abstract, an intermediate report, and a progress presentation; the spring course (CIS 4010) concludes with a final report, presentation, and demonstration. Advisers and the instructor jointly assess technical writing, oral communication, and project completion. Under this leadership, course and instructor evaluations have risen significantly above long-term historical averages.
CIS 5050 **Distributed Software Systems** Redesigned Spring 2008	Redesigned this core course for advanced undergraduates and first-year graduate students, adding large-scale data management in cloud platforms and data centers to distributed-computing fundamentals. The semester project, building a POP3- and SMTP-compliant mail server and extending it for fault tolerance and distribution, later evolved into a distributed chat server. The head TA received the Outstanding Teaching Assistant Award for 2008–2009.
GRADUATE SEMINARS	
CIS 8000 **Software-Defined Data Centers** Developed	Developed a graduate seminar on the foundations of software-defined data centers, emphasizing SDN, NFV, and compute and storage virtualization. Students read and discuss research papers, complete programming assignments, and build data center automation on open-source SDN and NFV platforms in a final project. Industry speakers from Brocade, Comcast, and Juniper Networks discuss practical applications.
CIS 8000 **Rigorous Internet Protocol Engineering** Introduced Fall 2011	Graduate course on formal modeling, high-assurance protocol design, verification, and protocol programming languages. Topics include mathematical models of Internet protocols, domain-specific languages for protocol specification, and verification for correctness and security, with case studies in IP routing, BGP policy configuration, secure BGP, transport protocols, overlay networks, and OpenFlow. Students gain hands-on experience with model checking and automated theorem proving.
CIS 7000 **Networking Meets Databases** Developed	Developed a research course at the intersection of networking and data management that drew Ph.D. students from networking, databases, and security. Several final projects were later published at workshops in security, peer-to-peer systems, networked data management, and mobile networking, with several follow-up conference submissions.
PROGRAM ADMINISTRATION	
CIS 19X **Mini-Course Series** Administrator	Administered the CIS undergraduate mini-course sequence of half-credit programming courses in C++, C#, Python, and Unix/Linux, later adding Haskell, iPhone programming, and Ruby on Rails. Taught weekly by graduate students, the courses give undergraduates practical programming experience and graduate instructors valuable teaching experience. Typical enrollment was about 30 students per course, and as high as 90 for Unix/Linux. From 2010 to 2012 the program expanded enrollment and course offerings, added industry guest instructors and both fall and spring offerings, and earned several teaching awards for instructors and TAs.

PRESS COVERAGE AND INTERVIEWS

- Penn Engineering – Congratulations to the Penn Engineering Online 2026 Graduates (June 5, 2026).

- Penn Engineering – Behind the Scenes of the New Online Master of Applied Science in Computer Science (MAS-CS Online) Degree (May 15, 2026).
- Penn Engineering – Solving Real-World Problems at Penn Engineering Senior Design (May 11, 2026).
- Penn Engineering – New Name, Same Mission: MCIT Evolves to Master of Applied Science in Computer Science (Apr 6, 2026)
- The Daily Pennsylvanian - Penn Engineering master's student launches 'PortaDash' app to map public restrooms (Apr 1, 2026)
- The Daily Pennsylvanian - Board of Trustees discusses Penn's financial future, global tensions at winter meeting (Mar 10, 2026)
- Penn Engineering Online – Beyond Algorithms: Engineering Judgment in the Age of AI (Feb 26, 2026). Also featured in Penn Today (April 10).
- The Daily Pennsylvanian – Penn Engineering announces accelerated online master's program (Jan 15, 2026).
- Penn Today – Awards and Accolades for Penn Faculty (Jan 9, 2026).
- Penn Engineering – Three Penn Engineers Named 2025 NAI Fellows (Dec 12, 2025).
- Penn Engineering – Penn Engineering and Ashoka University Launch New Partnership to Advance Research, Innovation and Graduate Study (Nov 17, 2025).
- Penn Engineering Online Blog – Penn Engineering: The Why behind the How (Sept 30, 2025).
- Technically Philly article – Penn dean is a startup founder and 'engineer at heart' who loves the connection between education and business (Oct 3, 2024).
- University of Pennsylvania Almanac – Penn's Ivy Plus Provost Leadership Fellows (Sept 17, 2024).
- Penn Engineering - Innovation in Action: Penn Engineering's 2024 Senior Design Project Competition (July 18, 2024)
- Penn Engineering Online - Boon Thau Loo: Senior Associate Dean for Education and Global Initiatives (Jul 2, 2024).
- Penn Engineering GRASP - The 2024 SEAS Graduate Awards Ceremony Shines a Spotlight on GRASP Student Achievements (May 28, 2024)
- Wharton Business Daily podcast - UPenn Impact of Tech/AI in the online/digital learning landscape (May 2024)
- Penn Engineering – Opening Doors and Changing Lives: Five Years of Penn Engineering Online Master's Degrees (March 25, 2024).
- Penn Engineering Graduate Education – The University of Pennsylvania hosts 2023 DEEPenn STEM Event (Nov 6, 2023)
- Penn Engineering Graduate Admissions – Penn Engineering Celebrates Annual Meyerhoff Day (June 21, 2023)
- Penn CIS Blog – DSL and SIG lab Renovations: Out with the Old, In with the New (Oct 6, 2022)
- Penn Engineering Online – Boon Thau Loo and Amish Patel Receive Lindback Teaching Awards (Apr 6, 2022).
- The Daily Pennsylvanian – Over 150 Penn faculty rebuke U.S. government for racial profiling of Chinese academics (Feb 11, 2022).
- Penn Engineering Online – Expanding Our Reach – Introducing Scholarships (Dec 8, 2021)
- Penn SEAS – The 2021 Ruth and Joel Spira Award for Excellence in Teaching: Professors Susan Davidson and Boon Thau Loo (Sept 3, 2021)
- PR Newswire – Myanmar's Frontiir acquires Termaxia, cloud storage high-tech firm in the US (Mar 6, 2020)
- Online Education – The rise of MOOC-based Master's Degrees at Elite Universities (Sept 17, 2019).
- Penn Engineering Medium – Penn Engineering announces four new scholarly chairs. (Aug 29, 2019).
- Penn Today – A cybersecurity boot camp to grow Philadelphia's digital workforce (Aug 23, 2019).
- Technically Philly article – Penn is launching a 24-week cybersecurity bootcamp (Aug 14, 2019).
- Penn LPS press release – Penn LPS and Penn Engineering launch Cybersecurity bootcamp to grow Philadelphia's digital workforce (Aug 7, 2019).

- Penn Engineering Online article – Why Boon Thau Loo says that Teaching Online is an opportunity of a lifetime (Jul 22, 2019).
- Coursera blog – Stories from Penn Engineering's MCIT Alumni and Faculty (July 3, 2019)
- Penn Engineering – Engineering Undergrads build fundamental of new peer-to-peer technology (May 20, 2019)
- The Daily Pennsylvanian – Penn Engineering sub-matriculants must now complete undergraduate degree in 4 years (Feb 28, 2019).
- Termaxia Medium.com – Termaxia Powers Leading Asia ISP's Cloud-based IPTV Service (Mar 2, 2019).
- Tech Target – Storage startup Termaxia stares at clouds (Jan 21, 2019).
- Penn Today – PCI event recognizes faculty trailblazers (Nov 27, 2018).
- Penn Engineering Medium.com – Computer Science Names 2018 J.P. Eckert Master's Fellows (Oct 12, 2018).
- University of Pennsylvania Almanac – SEAS Team: Naval Research Grant (Oct 16, 2018)
- Penn Engineering Medium.com – Reducing Complexity to Increase Security (Sept 24, 2018).
- PWCC News – Summer Networking Event at PWCC Connects Chinese Students and Alumni (Sept 11, 2018).
- Technical.ly Philly – How I crossed the academic chasm and entered the startup life (Aug 31, 2018).
- Technical.ly Philly – Penn Engineering launches its first online-only master's program on Coursera (July 25, 2018).
- Philadelphia Inquirer – University of Pennsylvania to offer fully-online master's program in computer science (July 25, 2018).
- Penn Engineering Medium.com - Taking Penn Engineering Technology to Market (Apr 16, 2018)
- Technical.ly Philly - One of StartUp PHL's original investments is finally out of stealth mode (Feb 8, 2018)
- Penn Engineering Medium.com - Penn Engineers Receive $6.1 Million Grant from Office of Naval Research to Reduce Software Complexity (Feb 7, 2018)
- Ben Franklin Technology Partners - Ben Franklin Approved $2.9M for 13 Early Stage Companies (Aug 18, 2016)
- Technical.ly Philly - This stealth-mode company nabbed $100K from StartUp PHL (July 20, 2016):
- PIDCPhila blog - Startup PHL initiative achieves success supporting entrepreneurs and startups in Philadelphia (July 20, 2016)
- The Daily Pennsylvanian - $1.9 million in government grants awarded to Penn researchers by National Science Foundation (June 13, 2016).
- Penn Engineering news - Penn's Distributed Systems Lab Receives $3.5M to Developing Innovative Defense (05/23/2016)
- NJ Tech Weekly - Juniper's OpenLab in Bridgewater Having Worldwide Impact (07/22/15).
- Network Computing - Lab Carries SDN-Based Software From Concept To Reality (06/01/15).
- The Daily Pennsylvanian article - Faculty startup raises $100K (04/07/2015).
- Technical.ly (Philly) article: Penn startup raises $100K from city's Startup PHL fund (03/27/2015).
- City of Philadelphia press release - Mayor Nutter announces Startup PHL Angel Fund Investment in Gencore Systems (03/27/2015).
- Philadelphia Business Journal - Penn startup raises $100K from Startup PHL Angel Fund (03/26/2015).
- The Daily Pennsylvanian - Penn researchers develop technology to improve computer networks (07/28/2014).
- Technical.ly (Philly) article - Meet one of the first faculty startups from Penn's Comp. Sci. department (Nov 6, 2013).
- Juniper networks press release - Juniper Networks launches production-ready Software-defined Networking Solution to Bring Networking into Cloud Era (Sept 16, 2013).
- Press releases on NSF Expeditions on Program Synthesis - Penn to Lead $10 Million Project on Computer-assisted Programming (Apr 3, 2013).
- Technical.ly Philly - A Penn startup gets a $150,000 National Science Foundation grant (Dec 4, 2013)

- Penn Current - Penn engineers participate in two $10 million projects (Apr 5, 2013).
- Technical.ly Philly - ExCAPE: Penn researchers will lead 5 yr, $10M project to program with talking computers (April 12, 2012).
- Penn engineering press release - Boon Thau Loo Receives AFOSR Young Investigator Award (2/12/2012).
- Press release on Air Force Office of Scientific Research (AFOSR) Young Investigator Program - AFOSR awards grants to 48 scientists and engineers through its Young Investigator Research Program (11 Jan 2012).

PROFESSIONAL ACTIVITIES

Organizational Activities:

- **Best paper award selection committee chair,** ACM Symposium on Cloud Computing (SOCC), 2026
- **Best paper award selection committee chair,** Symposium on SDN Research (SOSR), 2017.
- **Program co-chair**, 1st International Workshop on Rigorous Protocol Engineering (WRiPE), co-located with ICNP 2011.
- **Local arrangements chair**, 6th International Conference on emerging Networking EXperiments and Technologies (CoNEXT), 2010
- **Program co-chair**, 5th International Workshop on Networking meets Databases (NetDB), co-located with SOSP, 2009.
- **Program co-chair**, 4th International Conference on emerging Networking EXperiments and Technologies (CoNEXT) Student Workshop, 2008
- **Steering committee**, International Workshop on Networking-meets-Databases (NetDB), 2009-2011

Selected Program Committees:

- ACM SIGMOD, 2011, 2012, 2017 (demo), 2018, 2020, 2022 (Associate Editor), 2025 (Associate Editor), 2026 (Associate Editor), 2027 (Associate Editor), 2028 (Associate Editor)
- ACM SIGCOMM 2022
- ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT), 2009, 2020, 2021
- ACM Symposium on Cloud Computing (SOCC), 2011, 2014, 2020, 2026.
- European Conference on Computer Systems (Eurosys), 2019.
- Asia-Pacific Workshop on Networking (APNet), 2018, 2019.
- USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2017, 2018.
- 25th International Conference on Data Engineering (ICDE), 2009, 2010, 2012, 2017.
- Conference on Information and Knowledge Management (CIKM), 2017.
- 17th Privacy Preserving Technologies Symposium (PETS), 2017.
- Symposium on SDN Research (SOSR), 2016, 2017.
- Symposium on Operating Systems Design and Implementation (OSDI), 2016.
- Database Systems for Advanced Applications (DASFAA), 2014.
- Usenix Annual Technical Conference (ATC), 2013.
- 27th International Conference on Logic Programming (ICLP), 2012.
- WWW (Data and Content management track), 2012.
- ACM Symposium on Principle of Database Systems (PODS), 2012.
- ACM SIGMOD Dissertation Award, 2010.
- 34th Conference on Very Large Databases (VLDB), 2007, 2008, 2009, 2010, 2012, 2013.
- 4th Biennial Conference on Innovative Data Systems Research (CIDR), 2009, 2011.
- Conference on Computer Communications (IEEE INFOCOM), 2009.

- International Conference on Distributed Computing Systems (ICDCS) Operating Systems and Middleware track, 2007.

External Review Committee:

- Institute for Enterprise Engineering (IEnE), Pratt School of Engineering, Duke University, 2025.
- Penn School of Dental Medicine Master of Science in Oral Biology (MSBO) external reviewer (2023)
- Engineering for Professional division, John Hopkins University Whiting School of Engineering, 2019.

Funding Review Panels:

- Ministry of Education (Singapore) Tier-3 proposal whitepaper review, 2024
- Singapore Agency for Science, Technology and Research (A*STAR) Advanced Manufacturing Engineering – Programmatic (AME Programmatic) funding initiative review panel, Jan 2023.
- USA National Science Foundation panelist (approximately 1 panel a year on average). Participated in several program reviews including CISE (CNS, CRS, NETS, SATC, FMitF), NRT, SBIR, etc.
- Ministry of Education (Singapore) Tier-2 proposal panel reviews (2017 – present). Twice a year review panels to determine research proposals for funding in Singapore

Other Activities:

- Ivy Plus Provost Fellows program, 2024-2025
- Milken-Penn GSE Education Business Plan Competition, 2016.
- Workshop on Hot Topics in Middleboxes and Network Function Virtualization (HotMiddlebox), co-located with SIGCOMM, 2016.
- ACM CoNEXT Cloud-Assisted Networking (CAN) workshop, 2016.
- Program Committee, SIGMOD/PODS PhD Workshop, 2012.
- Program Committee, Datalog 2.0 workshop, 2012.
- Program Committee, Usenix Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (Hot-ICE), 2012.
- Program Committee, Off the Beaten Track (OBT): Underrepresented Problems for Programming Language Researchers (co-located with POPL), 2012.
- DARPA Information Science and Technology Study Group (ISAT) on Programming Functional Networks, 2012.
- DARPA Information Science and Technology Study Group (ISAT) on Program Synthesis, 2011.
- Program Committee, Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO), 2010.
- Program Committee, IEEE International Symposium on Policies for Distributed Systems and Networks (POLICY), 2010.
- Program Committee, 6th International Workshop on P2P Systems (IPTPS), 2007, 2009, 2010.
- Program Committee, 3rd International Workshop on Networking meets Databases (NetDB), 2007, 2008.
- Program Committee, 2nd SIGMOD PhD Workshop on Innovative Database Research (IDAR) 2008.
- Program Committee, VLDB PhD Workshop, 2008
- Program Committee, 9th International Workshop on Web Information and Data Management (WIDM), 2007.
- DARPA Information Science and Technology Study Group (ISAT) on Engineering Ensemble Effects, 2007.
- GENI project office proposal reviewer, 2008.
- Journal Reviewer: reviewer of several journals including VLDB Journal, ACM Transactions of Programming Languages and Systems (TPLS), ACM Transactions of Parallel and Distributed Databases (TPDS), IEEE/ACM Transactions on Networking (ToN), International Journal for Information Technology (IJIT), IEEE Transactions on Knowledge and Data Engineering (TKDE), ACM Transaction of Computer Systems (TOCS), Distributed and Parallel Databases (Springer), ACM Transactions on Databases Systems (TODS).

INVITED KEYNOTES

- **Programming Network Policies by Examples: Platform, Abstraction, and User Studies.** Invited talk at the Third Workshop on Networking and Programming Languages (NetPL), collocated with ACM SIGCOMM 2017.
- **A Declarative Perspective on Programmable Networking.** Invited keynote speaker at the Workshop on Software Defined Networking (SDN), co-located with the IEEE International Conference on Communications (ICC), 2012.
- **Recent Advances in Declarative Networking.** Invited keynote speaker at the 14th International Symposium on Practical Aspects of Declarative Languages (PADL), co-located with ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, Jan 2012.
- **Declarative Policy-based Networking.** Invited keynote speaker at the IEEE International Symposium on Policies for Distributed Systems and Networks (POLICY), Jul 2010.

INVITED SEMINARS

- **Transforming Learning: The Story of Penn Engineering Online.** Provost's Conversation on Online Learning (PCoOL), Columbia University, Jan 2025
- **Towards Full-Stack Adaptivity in Permissioned Blockchain Systems.** Institute of Infocom Research Singapore, Nanyang Technological University, National University of Singapore, Aug 2024
- **Towards Full-Stack Adaptivity in Permissioned Blockchain Systems.** University of California, Irvine, Oct 2023
- **Towards Full-Stack Adaptivity in Permissioned Blockchain Systems.** University of Delaware, Sept 2023
- **Towards Full-Stack Adaptivity in Permissioned Blockchain Systems.** Shanghai Tech University, Sept 2023
- **Declarative Programming in Software-defined Networks: Past, Present, and Future.** Chinese University of Hong Kong, Hong Kong Baptist University, Hong Kong Polytechnic University, and Hong Kong University of Science and Technology, Jul 2019.
- **Declarative Dispersion-Oriented Software.**
  National University of Singapore, July 2017.
- **Data Provenance at Internet Scale: Architecture, Experiences and the Road Ahead**
  Conference on Innovative Data Systems Research (CIDR), 2017.
- **Scenario-based Programming for SDN Policies.**
  National University of Singapore, Nanyang Technological University, July 2016.
- **Cloud: What's Next?**
  Wharton Technology Conference (panel moderator), Nov 2015.
- **Scenario-based Programming for SDN Policies.**
  Open Networking User Group (ONUG), Nov 2015.
- **Declarative Cloud Performance Analytics.**
  2015 Informs Annual Meeting -- Big Data in the Cloud Track, Nov 2015.
- **Declarative Network Programming: Implementation, Verification and Synthesis.**
  University of Pennsylvania ESE Colloquia, Sept 2015.
- **Automated Analysis and Actuation for Software Defined Infrastructure.**
  Software Defined Networking Symposium for Defense and National Security, Dec 2014.
- **Data Center, Co-location, Hosted Solutions - What is Best for my Business?**
  New Jersey Technical Council Data Summit and Expo (panel moderator), Dec 2014.
- **Faculty Start-Up Companies.**
  Penn Center for Innovation (PCI) Seminar, Nov 2014.
- **Declarative Networking.**
  Nanyang Technological University (NTU), Aug 2014.
- **Building a Start-Up in a Marketplace Ripe For Disruption.**
  National University of Singapore, Aug 2014.
- **Perspectives on University Technology Transfer.**

National University of Singapore iLEAD guest lecture (held at the University of Pennsylvania), Jul 2014.

- **Declarative Networking.**
  Air Force Research Laboratory, Jul 2014.
  AFOSR Young Investigator Meeting, Jun 2014.
- **Innovation Process and Core Methodology.**
  Comcast Innovation Summit, Sept 2013.
- **Automated Formal Analysis of Internet Routing Configurations.**
  National University of Singapore, 2013.
- **Declarative Networking.** Harvard University, Fall 2012 (Invited).
- **Declarative Constraint Optimizations in Distributed Systems**. New England Database Society, Sept 2012.
- **Declarative Networking.** Temple University, Sept 2012.
- **Declarative Networking.** Nanyang Technological University (NTU), Aug 2012.
- **Declarative Networking.** Singapore University of Technology and Design (SUTD), Aug 2012.
- **Declarative Constraint Optimizations in Distributed Systems**. National University of Singapore, Aug 2012.
- **Declarative Constraint Optimizations in Distributed Systems.** University of California Davis, May 2012
- **Declarative Distributed Constraint Optimization Platform.** Cornell University, Apr 2012.
- **Evolving the Internet with Declarative Networking.** Carnegie Mellon University, Feb 2012.
- **Evolving the Internet with Declarative Networking.** University of Washington-Seattle, Oct 2011.
- **Evolving the Internet with Declarative Networking.** University of California Berkeley, Sept 2011.
- **Evolving the Internet with Declarative Networking.** Rutgers University, Sept 2011.
- **Declarative Secure Distributed Systems.** Singapore Management University, Jul 2011.
- **Declarative Networking: Present and Future.** National University of Singapore, Jul 2011.
- **Secure Time-aware Provenance for Distributed Systems.** Advanced Digital Sciences Center, Singapore, Jun 2011.
- **Declarative Networking: Present and Future.** Advanced Digital Sciences Center, Singapore, Jun 2011.
- **Declarative Secure Distributed Systems.** University of California San Diego Database Seminar, Dec 2010.
- **Declarative Policy-based Networking.** NEC Labs Princeton, Aug 2010.
- **Declarative Policy-based Networking.** Keynote speaker at IEEE POLICY, Jul 2010,
- **Declarative Networking**. Lockheed Martin Advanced Technologies Laboratory (ATL), Apr 2010.
- **Declarative Secure Distributed Systems.** Stanford University, Security seminar, March 2010.
- **Declarative Techniques for Secure Network Routing.** DIMACS Workshop on Secure Routing, Rutgers University, March 2010.
- **Declarative Networking**. Telcordia Technologies, Mar 2010.
- **Datalog and Its Application to Network Routing Design.** Princeton University Research Seminar on *Formal Methods in Networking*, Feb 2010.
- **DS2: Declarative Secure Distributed Systems.** University of California-Berkeley Database Seminar, Dec 2009.
- **Applying PL and Database Techniques to Networking.** DIMACS Workshop on Designing Networks for Manageability, Rutgers University, Nov 2009.
- **DS2: Declarative Secure Distributed Systems.** University of Waterloo Database seminar, June 2009.
- **Declarative DSL: A Declarative Networking Perspective.** Panelist, ICDE 2008 panel on Declarative domain-specific languages.
- **Boon Thau Loo Speaks Out.** ACM SIGMOD Record (Sept 2007 edition)
- **The Design and Implementation of Declarative Networks.** AT&T Labs Research, New Jersey, Jul 2007.
- **The Design and Implementation of Declarative Networks.** National University of Singapore, June 2007.
- **The Design and Implementation of Declarative Networks.** ACM SIGMOD dissertation award presentation, Beijing, China, Jun 2007.
- **The Design and Implementation of Declarative Networks.** AT&T Labs Research, New Jersey, Jul 2007. BBN Technologies, Boston, Apr 2007.
- **Declarative Networking: Extensible Networks with Declarative Queries**. UC Santa Cruz Database Seminar, June 2006.

- **Declarative Networking: Extensible Networks with Declarative Queries**. Academic Job Talk, [Yale University, California Institute of Technology, University of Pennsylvania, University of Toronto, IBM Almaden, Cornell University, Microsoft Research Silicon Valley, Duke University, University of Texas-Austin, ETH Zurich, University of Michigan-Ann Arbor, University of California at Los Angeles], Feb-Apr 2006

INVITED PANELS

- **Penn China Engagement Forum (Jan 2024).** Participated in a panel with Deans from Graduate School of Education, Wharton, and Weitzman School of Design on academic collaborations and engagement with China.
- **Penn Global / GSE conference on the Future of Global Higher Education (Mar 2023).** Participated in a panel on future research collaborations.
- **Penn and Mellon Fellows Leadership panel (Feb 2023).** Participated in a panel with two other Associate Deans, discussing leadership roles at the University with Penn and Mellon Fellows.

BOOKS

- **Logic, Language, and Security: Essays Dedicated to Andre Scedrov on the Occasion of His 65th Birthday**, Edited by Vivek Nigam, Tanjanan Ban Kirigin, Carolyn Talcott, Joshua Guttman, Stepan Kuznetsov, Boon Thau Loo, and Mitsuhiro Okada, Lecture Notes in Computer Science, 12300, Springer International Publishing, Oct 2020.
- **Datalog and Recursive Query Processing.**
  Todd J. Green, Shan Shan Huang, Boon Thau Loo, and Wenchao Zhou.
  Foundations and Trends in Databases, Nov, 2013.
- **Declarative Networking.**
  Boon Thau Loo, and Wenchao Zhou.
  Morgan & Claypool's Synthesis Lectures on Data Management, 2012.

JOURNAL PUBLICATIONS

27	10	7	4	4
Journal articles 2009–2024, including Communications of the ACM	**Networking** IEEE/ACM ToN 6 · Computer Networks 2 · SIGCOMM CCR · Springer FIA	**Systems & Cloud** SIGOPS OSR 2 · ACM TAAS · Cluster Computing · CCPE · SIGMETRICS PER · IEEE Systems	**Databases** IEEE TKDE · SIGMOD Record 2 · IEEE Data Eng. Bulletin	**Security, PL & Formal Methods** COMLAN 2 · PoPETS · Logical Methods in CS

- **Towards Truly Adaptive Byzantine Fault-Tolerant Consensus.** Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, and Ryan Marcus. ACM SIGOPS Operating Systems Review, Volume 58, Issue 1, 2024.
- **Synthesizing Formal Network Specifications from Input-Output Examples.**
  Haoxian Chen, Chenyuan Wu, Andrew Zhao, Mukund Raghothaman, Mayur Naik, and Boon Thau Loo.
  IEEE/ACM Transactions on Networking (ToN), Sept 2022.
- **The Use of Crowdfunding and Social Media Platforms in Strategic Start-up Communication: A Big-data Analysis**.
  Sun-Young Park and Boon Thau Loo.
  International Journal of Strategic Communication 16 (2), 313-331, Mar 2022
- **NetEgg: A Scenario-based Programming Toolkit for SDN Policies.**
  Yifei Yuan, Dong Lin, Anil Siri, Harsh Verma, Anirudh Chelluri, Rajeev Alur, and Boon Thau Loo.
  ACM/IEEE Transactions on Networking (ToN), 2018.
- **Data Center Diagnostics with Network Provenance**
  Ang Chen, Chen Chen, Lay Kuan Loh, Yang Wu, Andreas Haeberlen, Limin Jia, Boon Thau Loo, Wenchao Zhou. IEEE Data Eng. Bull. 41(1): 74-85 (2018)

- **Scalable and Anonymous Group Communication with MTor**
  Dong Lin, Micah Sherr, and Boon Thau Loo.
  Proceedings on Privacy Enhancing Technologies (PoPETS), 2016
- **A Program Logic for Verifying Secure Routing Protocols.**
  Chen Chen, Limin Jia, Hao Xu, Cheng Luo, Wenchao Zhou, and Boon Thau Loo.
  Logical Methods in Computer Science Journal, 2015.
- **Exploiting Cloud Heterogeneity to Optimize Performance and Cost of MapReduce Processing.**
  Zhuoyao Zhang, Lucy Cherkasova, and Boon Thau Loo.
  ACM SIGMETRICS Performance Evaluation Review, (PER), Special Issue on Performance and Resource Management in Big Data Applications, March, 2015, Pages 38-50.
- **Private and Verifiable Interdomain Routing Decisions.**
  Mingchen Zhao, Wenchao Zhou, Alexander J. T. Gurney, Andreas Haeberlen, Micah Sherr, and Boon Thau Loo
  IEEE/ACM Transactions on Networking (ToN), 2014, Pages 383-394.
- **A Brief Overview of the NEBULA Future Internet Architecture**.
  The Nebula FIA team.
  ACM SIGCOMM Computer Communication Review, 2014, Pages 81-86.
- **Declarative Platform for High-Performance Network Traffic Analytics.**
  Harjot Gill, Dong Lin, Cam Nguyen, Tanveer Gill, and Boon Thau Loo.
  Cluster Computing journal, 2014, Pages 1121-1137.
  Special Issue on selected best papers of HPDC 2013.
- **Parameterizable Benchmarking Framework for Designing a MapReduce Performance Model.**
  Zhuoyao Zhang, Ludmila Cherkasova, and Boon Thau Loo.
  Concurrency and Computation: Practice and Experience journal, 2014, Pages 2005-2026. ICPE 2013 special issue.
- **PUMA: Policy-based Unified Multi-radio Architecture for Agile Mesh Networking.**
  Changbin Liu, Ricardo Correa, Harjot Gill, Tanveer Gill, Xiaozhou Li, Shivkumar Muthukumar, Taher Saeed, Boon Thau Loo, and Prithwish Basu.
  IEEE/ACM Transactions on Networking (ToN), 2013, Pages 1897-1910,
- **The Design and Implementation of the A3 Application-Aware Anonymity Platform.**
  Micah Sherr, Harjot Gill, Taher Aquil Saeed, Andrew Mao, William R. Marczak, Saravana Soundararajan, Wenchao Zhou, Boon Thau Loo, and Matt Blaze.
  Computer Networks (COMNET), Elsevier Publishing, 2013, Pages 206-227.
- **Performance Modeling and Optimization of Deadline-Driven Pig Programs.**
  Zhuoyao Zhang, Ludmila Cherkasova, and Boon Thau Loo.
  ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2013.
  Journal version of ACM ICAC'12 best student paper award.
- **The NEBULA Future Internet Architecture.**
  The NSF NEBULA FIA Team.
  The Future Internet, Springer Berlin Heidelberg publisher, 2013.
- **Declarative Secure Distributed Information Systems.**
  Wenchao Zhou, Tao Tao, Boon Thau Loo, and Yun Mao
  Computer Languages, Systems & Structures (COMLAN), Elsevier Publishing, 2012, Pages 1-24.
- **Experiences in Teaching an Educational User-Level Operating Systems Implementation Project**.
  Adam J. Aviv, Vin Mannino, Thanat Owlarn, Seth Shannin, Kevin Xu, and Boon Thau Loo
  Operating Systems Review (OSR) journal, 2012, Pages 80-86.
- **AS-CRED: Reputation and Alert Service for Inter-domain Routing.**
  Jian Chang, Krishna Venkatasubramanian, Andrew West, Sampath Kannan, Insup Lee, Boon Thau Loo, and Oleg Sokolsky.
  IEEE Systems Journal (Special Issue on Security and Privacy of Complex Systems), 2012.

- **Maintaining Distributed Logic Programs Incrementally.**
  Vivek Nigam, Limin Jia, Boon Thau Loo and Andre Scedrov.
  Computer Languages, Systems & Structures (COMLAN), Elsevier Publishing, 2012, Pages 158-180.
- **MOSAIC: Declarative Platform for Dynamic Overlay Composition.**
  Yun Mao, Boon Thau Loo, Zachary Ives and Jonathan M. Smith
  Computer Networks (COMNET), Elseiver Publishing, Pages 64-84, 2012.
- **FSR: Formal Analysis a Implementation Toolkit for Safe Inter-domain Routing**
  Anduo Wang, Limin Jia, Wenchao Zhou, Yiqing Ren, Boon Thau Loo, Jennifer Rexford, Vivek Nigam, Andre Scedrov, Carolyn L. Talcott.
  IEEE/ACM Transactions on Networking (ToN), 2012.
- **Declarative Policy-based Adaptive Mobile Ad Hoc Networking.**
  Changbin Liu, Ricardo Correa, Xiaozhou Li, Prithwish Basu, Boon Thau Loo, Yun Mao.
  IEEE/ACM Transactions on Networking (ToN), 2012, Pages 770-783.
- **SmartCIS: Integrating Digital and Physical.**
  Mengmeng Liu, Svilen R. Mihaylov, Zhuowei Bao, Marie Jacob, Zachary G. Ives, Boon Thau Loo, and Sudipto Guha.
  ACM SIGMOD Record, Mar 2010. Pages 48-53.
- **5th International Workshop on Networking Meets Databases (NetDB 2009)**
  Boon Thau Loo, and Stefan Saroiu
  ACM SIGMOD Record and the ACM Operating Systems Review (OSR), Dec 2009.
- **Declarative Networking**
  Boon Thau Loo, Tyson Condie, Minos Garofalakis, David E. Gay, Joseph M. Hellerstein, Petros Maniatis, Raghu Ramakrishnan, Timothy Roscoe, Ion Stoica
  Communications of the ACM, 2009. Pages 87-95.
- **Maintaining Recursive Views of Regions and Connectivity in Networks**
  Mengmeng Liu, Nicholas E. Taylor, Wenchao Zhou, Zachary Ives, and Boon Thau Loo.
  IEEE Transactions of Knowledge and Data Engineering (TKDE) Journal, 2009. Pages 1126-1141.
  Special Issue on Best papers of the 25th International Conference on Data Engineering (ICDE), 2009

HIGHLY SELECTIVE CONFERENCE PUBLICATIONS

84	33	22	16	13
Conference papers in highly selective venues, 2001–2026	**Databases** SIGMOD 10 · VLDB 11 · CIDR 7 · ICDE 3	**Networking** SIGCOMM 6 · NSDI 5 · COMSNETS 3 · CoNEXT 2 · INFOCOM 2 · ICNP 2	**Systems & Cloud** SOSP 3 · SoCC 3 · USENIX ATC 3 · ICAC 2 · EuroSys · HPDC · PODC	**Security, PL & Formal Methods** TACAS 3 · ACSAC 2 · PPDP 2 · ICSE · ESEC/FSE · NDSS · PETS · FMCAD

- **DAG of DAGs: Order-Fairness Made Practical.** Heena Nagda, Sidharth Sankhe, Sakshi Sinha, Keon Attarha, Mohammad Javad Amiri, and Boon Thau Loo. SIGMOD International Conference on Management of Data, June 2026.
- **Adaptive Sharding in Untrusted Environments.** Bhavana Mehta, Nupur Baghel, Mohammad Javad Amiri, Boon Thau Loo, and Ryan Marcus. SIGMOD International Conference on Management of Data, June 2026.
- **Privacy Meets Regulations: Shaping the Future of Work.** Mohammad Javad Amiri, Tristan Allard, Boon Thau Loo, Divyakant Agrawal, and Amr El Abbadi. Conference on Innovative Data Systems Research (CIDR), Jan 2026.
- **Stage-Aligned Multiplexing for Multi-LLM Serving**. Tao Luo, Kelvin Ng, Zhen Ping Khor, Sidharth Sankhe, Boon Thau Loo, and Vincent Liu. 16th ACM Symposium on Cloud Computing (SOCC '25), Dec 2025
- **On the Automated Verification of BGP Convergence.** Haoyun Qin (*), Gerald Whitters (*), Boon Thau Loo, and Carolyn Talcott. Principles and Practice of Declarative Programming (PPDP), Sept 2025. We gratefully

acknowledge Vivek Nigam's significant contributions to the development of this work. (*) Joint first authors with equal contributions.

- **BFTBrain: Adaptive BFT Consensus with Reinforcement Learning.** Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, and Ryan Marcus. USENIX Symposium on Networked Systems Design and Implementation (NSDI), April 2025.
- **BFTGym: An Interactive Playground for BFT Protocols.** Haoyun Qin, Chenyuan Wu, Mohammad Javad Amiri, Ryan Marcus, and Boon Thau Loo. 50th International Conference on Very Large Databases (VLDB) Demo, 2024.
- **Rashnu: Data-Dependent Order-Fairness.**
  Heena Nagda, Shubhendra Pal Signal, Mohammad Javad Amiri, and Boon Thau Loo.
  50th International Conference on Very Large Databases (VLDB), 2024.
- **Towards Full Stack Adaptivity in Permissioned Blockchains [Vision Paper].**
  Chenyuan Wu, Mohammad Javad Amiri, Haoyun Qin, Bhavana Mehta, Ryan Marcus, and Boon Thau Loo.
  50th International Conference on Very Large Databases (VLDB), 2024.
- **Verifying Declarative Smart Contracts.**
  Haoxian Chen, Lan Lu, Brendan Massey, Yuepeng Wang, Boon Thau Loo.
  46th International Conference on Software Engineering (ICSE), April, 2024.
- **The Bedrock of Byzantine Fault Tolerance: A Unified Platform for BFT Protocols Analysis, Implementation, and Experimentation.**
  Mohammad Javad Amiri, Chenyuan Wu, Divyakant Agrawal, Amr El Abbadi, Boon Thau Loo, and Mohammad Sadoghi.
  USENIX Symposium on Networked Systems Design and Implementation (NSDI), April 2024.
- **AdaChain: A Learned Adaptive Blockchain.**
  Chenyuan Wu, Bhavana Mehta, Mohammad Javad Amiri, Ryan Marcus, and Boon Thau Loo.
  49th conference on Very Large Databases (VLDB), Aug 2023.
- **FlexChain: An Elastic Disaggregated Blockchain**.
  Chenyuan Wu, Mohammad Javad Amiri, Jared Asch, Heena Nagda, Qizhen Zhang, and Boon Thau Loo.
  49th conference on Very Large Databases (VLDB), Aug 2023.
- **Saguaro: An Edge Computing-enabled Hierarchical Permissioned Blockchain.**
  Mohammad Javad Amiri, Ziliang Lai, Liana Patel, Boon Thau Loo, Eric Lo, and Wenchao Zhou.
  39th IEEE International Conference on Data Engineering (ICDE), Apr 2023.
- **Templating Shuffles.**
  Qizhen Zhang, Jiacheng Wu, Ang Chen, Vincent Liu, and Boon Thau Loo.
  Conference on Innovative Data Systems Research (CIDR), Jan 2023.
- **Towards Practical Application-level Support for Privilege Separation**. Nik Sultana, Henry Zhu, Ke Zhong, Zhilei Zheng, Ruijie Mao, Digvijay Chauhan, Stephen Carrasquillo, Junyong Zhao, Lei Shi, Nikos Vasilaki, and Boon Thau Loo. Annual Computer Security Applications Conference (ACSAC), Dec 2022.
- **Declarative Smart Contracts.**
  Haoxian Chen, Gerald Whitters, Mohammad Javad Amiri, Yuepeng Wang, and Boon Thau Loo.
  21st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Nov 2022.
- **Qanaat: A Scalable Multi-Enterprise Permissioned Blockchain System with Confidentiality Guarantees.**
  Mohammad Javad Amiri, Boon Thau Loo, Divy Agrawal, and Amr El Abbadi,
  48th conference on Very Large Databases (VLDB), Aug 2022.
- **Optimizing Data-intensive Systems in Disaggregated Data Centers with TELEPORT**.
  Qizhen Zhang, Xinyi Chen, Sidharth Sankhe, Zhilei Zheng, Ke Zhong, Sebastian Angel, Ang Chen, Vincent Liu, and Boon Thau Loo.
  ACM SIGMOD International Conference on Management of Data, June 2022.

- **Automatic Repair for Network Programs.**
  Lei Shi, Yuepeng Wang, Boon Thau Loo and Rajeev Alur.
  International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Apr 2022.
- **CompuCache: Remote Computable Caching with Spot VMs.**
  Qizhen Zhang, Philip Bernstein, Daniel Berger, Badrish Chandramouli, Vincent Liu, and Boon Thau Loo.
  Conference on Innovative Data Systems Research (CIDR), 2022.
- **When Idling is Ideal: Optimizing Tail-Latency for Highly-Dispersed Datacenter Workloads with Perséphone.**
  Max Demoulin, Josh Fried, Issac Pedisich, Marios Kogias, Boon Thau Loo, Linh Thi Xuan Phan, and Irene Zhang.
  28th ACM Symposium on Operating Systems Principles (SOSP), October 2021.
- **Network Traffic Classification by Program Synthesis.**
  Lei Shi, Yahui Li, Boon Thau Loo and Rajeev Alur.
  International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), 2021.
- **Flightplan: Automatic Disaggregation and Placement for P4 Programs.**
  Nik Sultana, John Sonchack, Hans Giesen, Isaac Pedisich, Zhaoyang Han, Nishanth Shyamkumar, Shivani Burad, Andre Dehon, and Boon Thau Loo.
  USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2021.
- **Understanding the Effect of Data Center Resource Disaggregation on Production DBMSs.**
  Qizhen Zhang, Yifan Cai, Xinyi Chen, Sebastian Angel, Ang Chen, Vincent Liu, and Boon Thau Loo
  46th conference on Very Large Databases (VLDB), Aug 2020.
- **Provenance for Probabilistic Logic Programs**.
  Shaobo Wang, Hui Lyu, Jiachi Zhang, Chenyuan Wu, Xinyi Chen, Wenchao Zhou, Boon Thau Loo, Susan B. Davidson and Chen Chen.
  23rd International Conference on Extending Database Technology, (EDBT), Apr 2020. **Best paper award.**
- **Rethinking Data Management Systems for Disaggregated Data Centers.**
  Qizhen Zhang, Yifai Cai, Sebastian Angel, Ang Chen, Vincent Liu, and Boon Thau Loo.
  Conference on Innovative Data Systems Research (CIDR), Jan, 2020.
- **Detecting Application-layer Denial-of-Service Attacks with FineLame.**
  Henri Maxime Demoulin, Isaac Pedisich, Nikos Vasilakis. Vincent Liu, Boon Thau Loo, Linh Thi Xuan Phan.
  2019 USENIX Annual Technical Conference (USENIX ATC), July 2019.
- **DeDoS: Defusing DoS with Dispersion Oriented Software.**
  Henri Maxime Demoulin*, Tavish Vaidya*, Isaac Pedisich, Bob Dimaiolo, Jingyu Qian, Chirag Shah, Yuankai Zhang, Ang Chen, Andreas Haeberlen, Boon Loo, Linh Phan, Micah Sherr, Clay Shields and Wenchao Zhou.
  Annual Computer Security Applications Conference (ACSAC), 2018. **Lead students are listed alphabetically.*
- **Optimizing Declarative Graph Queries at Large Scale.**
  Qizhen Zhang, Akash Acharya, Hongzhi Chen, Simran Arora, Ang Chen, Vincent Liu, and Boon Thau Loo.
  ACM SIGMOD International Conference on Management of Data, June, 2019.
- **An Extensible Evaluation System for DoS Research.**
  Nik Sultana, Shilpi Bose, and Boon Thau Loo.
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- **Towards Adaptive Fault-Tolerant Sharded Databases (Extended Abstracts).**
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- **In-network Computing to the Rescue of Faulty Links** Hans Giesen, Lei Shi, John Sonchack, Anirudh Chelluri, Nishant Prabhu, Nik Sultana, Latha Kant, Anthony J. McAuley, Alexander Poylisher, Andre Dehon, and Boon Thau Loo.
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