



**Serving State, Local and National Workforces
Through the Development of
New Technologies and Leaders**

IMPACT REPORT 2024

TABLE OF CONTENTS

Letter from the Director	4
Introduction to I2S	4
Our Story	5
Our Mission	6
Our Work	6
Our Director	7
Our Centers	
Radar Systems Lab (RSL)	
Update from RSL Director Shannon Blunt	8
RSL In Focus	9
Center for Communications, Networking & Photonics (CCNP)	
Update from CCNP Director Rongqing Hui	10
CCNP In Focus	11
High Assurance & Secure Systems Center (HASSC)	
Update from HASSC Director Bo Luo	12
HASSC In Focus	13
Mathematical Methods & Interdisciplinary Computing Center (MMICC)	
Update from MMICC Director Suzanne Shontz	14
MMICC In Focus	15
Center for Cyber-Social Dynamics (CCSD)	
Update from CCSD Director John Symons	16
CCSD In Focus	17
Computer Systems Center (CSC)	
Update from CSC Director Prasad Kulkarni	18
CSC In Focus	19
I2S Events	20
Awards and Projects	22

*Nichols Hall on KU's West District
Headquarters of I2S*



LETTER FROM PERRY ALEXANDER DIRECTOR OF I2S

The last two years have been eventful at the Institute for Information Sciences (I2S). Perhaps most noteworthy was our transformation from the Information and Telecommunications Technology Center to I2S in 2022. This restructuring was not merely symbolic, but an important distinction that recognized the growth and inclusion of new and evolving technologies that touch all aspects of information-related research as well as their impacts on society.

I2S is now organized as six research centers capturing core research focuses. Areas from our earliest days such as remote sensing research (now the Radar Systems Lab, directed by Professor Shannon Blunt) and telecommunications and networking (now the Center for Communications, Networking and Photonics, directed by Professor Ron Hui) continue at the heart of our activities. The High Assurance and Secure Systems Center, directed by Professor Bo Luo, and the Mathematical Methods and Interdisciplinary Computing Center, led by Professor Suzanne Shontz, and the Computer Systems Center, led by Professor Prasad Kulkarni, represent more recent areas of substantial growth. Our newest center, the Center for Cyber-Social Dynamics, directed by Professor John Symons, brings together researchers exploring computing impacts on societal norms. Whether a particular research area is longstanding or emerging, all continue to be supported by I2S and grow collectively through extramural grants and support from KU's Office of Research (KUOR).

With our recent successes and growth, our immediate aims include further developing our research infrastructure by increasing our research faculty and staff. Through support from KU's Research Rising program, KUOR, and Primary Investigator (PI) funding, we have hired four faculty jointly appointed with KUOR, several research faculty, two postdocs and an associate director to help grow and administer our center. As a result, we are growing across the enterprise. The following pages serve as a snapshot of the work being done day in and day out across all our research centers.

While we continue to evolve with the rapid development of information technologies, a reminder that our core mission is and will always be to nurture our research community. Our primary goals remain supporting our PIs in groundbreaking research, positioning our students for success, and serving our state, region and nation. I2S demonstrates every day that research is education.

Perry



OUR STORY

The Institute for Information Sciences has a robust and remarkable history that spans six decades. In 1964, radar engineer and Professor Emeritus of Electrical Engineering and Computer Science Richard Moore launched the Remote Sensing Laboratory (RSL) at the University of Kansas. One of its early inventions was the radar radiometer and later the scatterometer. Such an instrument was eventually flown on the NASA's Skylab.

In 1983, Kumarasamy "Sam" Shanmugan established the Telecommunications and Information Sciences Laboratory (TISL). Through TISL, Shanmugan explored topics such as wireless communication systems and simulation of communication systems. His research interests included channeling modeling and wideband code division multiple access over satellite links.

Several years later, Shanmugan was instrumental in launching the Center for Excellence in Computer Aided Systems Engineering (CECASE), a separate research center supported by the Kansas Technology Enterprise Corporation and led by Dr. Julian Holtzman. CECASE applied the technical expertise of its staff and faculty in systems and software engineering to help Kansas companies solve problems in information and communication technology areas.

Meanwhile, in the early 1990s, TISL became a founding and contributing member of the multimedia Multidimensional Applications and Gigabit Internetwork Consortium, a pioneer in the World Wide Web. In 1996, TISL and CECASE were merged to form the Information and Telecommunications Technology Center (ITTC) under the leadership of Shanmugan.

As the next millennium approached, ITTC absorbed the RSL and launched the Ambient Computational Environments project, or smart rooms, which brought together computer vision, speech recognition, and sensors. Alongside these tremendous technological achievements, ITTC's Rapidly Deployable Radio Network project put KU on the map for mobile wireless networking.

Throughout the 2000s, several accomplishments were achieved by ITTC. We received our 10th U.S. patent. We launched our first company, Veatros, which developed technology designed to conduct real-time video processing. By 2002, ITTC's annual research expenditures exceeded \$7 million, total ITTC royalty and licensing income to KU exceeded \$1 million and the ITTC Graduate Fellowship was established.

By 2006, ITTC research achieved 30 technology licenses, totaled more than \$55 million research expenditures, and attracted 87 company sponsors. All of that led to the completion and installation of a 384 CPU cluster with more than 30 TB of storage – a massive amount for the time.

In response to the evolution of technology since the formation of ITTC, we announced a change in our name to the Institute of Information Sciences (I2S). This restructuring was made possible through our Research Rising initiative, an interdisciplinary, multicenter organization focused on finding solutions to otherwise unsolved problems related to safe and secure physical, digital and social environments — ultimately creating more secure and resilient communities.

OUR MISSION

Our mission at I2S covers three distinct objectives:

- **Basic and Applied Research:**
To create and disseminate fundamental knowledge and new technologies
- **Advanced Workforce Development:**
To educate and train students for technology leadership
- **Science and Technology Services:**
To provide state, national, and international leadership for next generation information infrastructure



OUR WORK

Today, our areas of research at I2S address a wide range of modern communications technologies and concerns. It's important to note that these technologies, and the risks that accompany them, continue to expand and evolve at a very rapid pace. Our faculty and graduate researchers continuously strive to improve technologies within their respective scopes of work.

RESEARCH AREAS

*Blockchain • Computer Systems • Applied Mathematics • Ethics & Policy • Fiber Optics
Quantum Computing • Radar Systems • Computer Architecture • Embedded Systems
Cybersecurity & Privacy • Network Communications • Programming Languages
Signal Processing • RF Systems Engineering • Photonics & Optoelectronics
Computational Science & Engineering • Artificial Intelligence & Machine Learning*

OUR DIRECTOR

Perry Alexander, Ph.D., is the AT&T Foundation Distinguished Professor of Electrical and Computer Science and Director of the Institute for Information Sciences at the University of Kansas. His research and teaching interests include formal verification and synthesis, trusted systems, and programming language semantics.

After completing his Ph.D. from the University of Kansas in 1992, Dr. Alexander spent eight years with the Electrical and Computer Engineering Department at the University of Cincinnati. While there, he began to pursue interests in formal methods and automated software engineering, and founded and directed the Knowledge-Based Software Engineering Laboratory. Upon returning to KU in the early 2000s, he joined the Information and Telecommunications Technology Center (ITTC), as a principal investigator. Initially a lead

Primary Investigator on the KU NSA Science of Security Lablet, Dr. Alexander continues developing verified trusted computing semantics and infrastructure.

As director, in 2022, he led the formal name change from ITTC to I2C to recognize the evolution of technology since the ITTC was formed in 1996. The name change ultimately represents an effort to “include all forms of information-related research in our work from sensing to human response.”



OUR CENTERS

Institute Centers organize faculty by research area and by project. Our six centers of focus exist indefinitely to provide community, share resources, and perform collaborative research. Award-Based Centers result from center-level grants to provide visibility and community. The Institute/Center model is adopted from the structure common to other KU research centers.

RADAR SYSTEMS LAB (RSL)

At the Radar Systems Laboratory (RSL), our research in 2023 has been productive and bountiful. As always, we are working on a broad cross-section of radar topics, including diverse radar waveform design, optimized and adaptive receive processing, radio frequency direction finding, and sonar signal processing. We emphasize connecting theoretical advances with open-air experimental demonstrations.

We have numerous projects under current funding that run ongoing and in parallel with our comprehensive work, and we continue to make progress on multiple initiatives now and into the future at KU's Innovation Park and I2S headquarters at Nichols Hall.

It is worth noting that Innovation Park and KU RSL offer a tremendous and highly resourceful advantage to our studies as a state-of-the-art research facility.

The investments made through partnerships from both industry leaders and at the federal level continue to build the university into a leading hub for the highest level of defense technology developments. At the lab, this allows us to expand cutting-edge research that will lead to vast improvements in effective operations in spectrally congested and contested environments.

Our work is presented regularly at both the national and international levels through the Institute of Electrical and Electronics Engineers (IEEE) conferences. The IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

Shannon



KU's Innovation Park

RSL IN FOCUS

The Radar Systems and Remote Sensing Laboratory (RSL) conducts research in radar and other electromagnetic/acoustic sensing problems, including advanced system concepts, radar image formation, adaptive radar signal processing, multi-function systems, real-time/cognitive sensing, radar waveform diversity and design, and radar modelling and simulation.



DIRECTOR: SHANNON BLUNT

Dr. Shannon D. Blunt is the Roy A. Roberts Distinguished Professor of Electrical Engineering and Computer Science at the University of Kansas, Director of the KU Radar Systems Lab, and Director of the Kansas Applied Research Lab. He received a Ph.D. in electrical engineering from the University of Missouri in 2002, and from 2002 until he joined KU in 2005, he was with the Radar Division of the U.S. Naval Research Laboratory in Washington, D.C. His research interests are in sensor signal processing and system design with a particular emphasis on waveform diversity and spectrum sharing techniques, having made a variety of contributions that have been deployed in operational radar and sonar systems.

CENTER FOR COMMUNICATIONS, NETWORKING & PHOTONICS (CCNP)

At the Center for Communications, Networking, and Photonics (CCNP), we are a multi-disciplinary research center that conducts research on a wide range of topics, from wireline and wireless telecommunication systems and networks to electromagnetics and photonics.

In 2023, faculty Primary Investigators (PIs) in CCNP received an unprecedented number of research awards from various federal agencies, as well as from across the telecommunications industry. Faculty member and professor Taejoon Kim was elected to lead a multi-university team on Zero Trust X (ZTX) to combat vulnerability and unawareness in 5G network security.

Our research in wireless networks, especially in rural connectivity, has been featured in KU News, the American Society for Engineering Education, and Space War – part of Space Daily, a premier destination for space industry news.

Our research efforts have resulted in a large number of impactful publications in leading academic and engineering journals as well as presentations at prestigious international conferences. Faculty and graduate students were also nominated with top honors for their research papers.

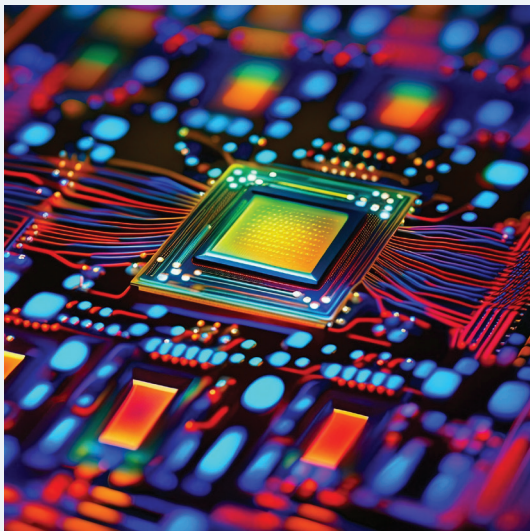
Building upon our prior success, we will continue to make progress in the coming years. In particular, we will promote collaborations among research groups within CCNP, as well as collaborations with external groups, to broaden our scope of research and pursue new opportunities.

Ron



DIRECTOR: RONGQING HUI

From 1982 to 1985, Dr. Rongqing Hui taught at the Physics Department of Anhui University, Hefei, China, where he also conducted research into optical fibers and sensors. From 1985 to 1989, he was with the Optical Communications Laboratory of Beijing University of Posts and Telecommunications, where he worked in the field of coherent optical fiber communication systems and components. From 1989 to 1990, he held a Research Fellowship from Fondazione Ugo Bordoni, Rome, Italy, where he worked on nonlinear effects and optical injection locking of semiconductor laser devices. From 1990 to 1993, he was with the Department of Electronics, Politecnico Di Torino, where he worked on optical communications and single frequency semiconductor laser devices. He is currently a Professor in the Department of Electrical Engineering and Computer Science at the University of Kansas and the Director of the Center for Communications, Networking and Photonics at I2S.



CCNP IN FOCUS

The Center for Communication, Networking, and Photonics (CCNP) conducts research in telecommunication systems, subsystems and networks to photonic materials, devices, and the understanding of their fundamental physics and engineering design rules.

HIGH ASSURANCE & SECURITY SYSTEMS CENTER (HASSC)

The High Assurance and Secure Systems Center (HASSC) has and continues to play an important role as a disciplined research hub focused on the evolution and improvement of cybersecurity technologies at I2S. Our PIs cover work on a wide range of security and privacy research.

Recent awards for projects include more than \$500,000 from the National Science Foundation (NSF) for CAREER: SATC: on Bridging the Gap Between Research and Practice: Automation and Metrics in Security Operation Centers, led by associate professor Alex Bardas; and a \$1.8 million NSF award for Collaborative Research: Frameworks: Automated Quality Assurance and Quality Control for the StraboSpot Geologic Information System and Observational Data, led by associate professor Drew Davidson.

Notably, in 2023, the Department of Defense awarded a two-year grant valued at \$1.5 million to the center and I2S to participate in the Virtual Institute for Cyber and Electromagnetic Spectrum Research and Employ (VICEROY). The VICEROY program at KU is referred to as the Midwest VICEROY Institute, or MVI, and is led by professor Fengjun Li. MVI is one of three virtual institutes in the country. The complexity and diversity of modern digital communications systems, such as 5G and 6G networks, as well as AI and electronic warfare systems, present significant challenges to protecting networks from cyberattacks. According to Li, the MVI program seeks to address the national cybersecurity workforce shortage and aims to train future leaders in cybersecurity and cyber operations.

In support of our mission in education, the HASSC has and will continue to host GenCyber Summer Camp for Teachers with support from the National Security Agency and the NSF. The general goals of the program are: (1) Ignite, sustain, and increase awareness of K-12 cybersecurity content and cybersecurity postsecondary and career opportunities for participants through year-round engagement; (2) Increase student diversity in cybersecurity college and career readiness pathways at the K-12 level; and (3) Facilitate teacher readiness within a teacher learning community to learn, develop, and deliver cybersecurity content for the K-12 classroom in collaboration with other nationwide initiatives. We look forward to hosting GenCyber Camp again in July 2024 and for years to come.

IEEE S&P, ACM CCS, USENIX Security, and NDSS are considered the most prestigious and competitive publication venues for security and privacy research, a.k.a., the “Big Four”. In 2024, HASSC researchers have published 10 papers in the big four conferences, including one paper in IEEE S&P, five papers in USENIX Security, three papers in ACM CCS, and one paper in NDSS.

Bo

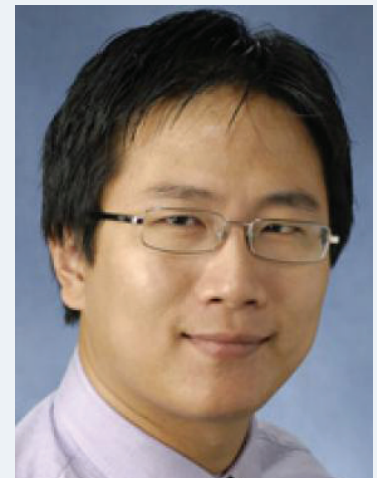
HASSC IN FOCUS

The High Assurance and Secure Systems Center (HASSC) provides a university-wide focal point for those involved in cybersecurity research, development, and education. HASSC researchers cover a wide spectrum of security and privacy research, including system security, network security, data/information security, hardware security, and privacy. Expertise includes theoretical modeling, synthesis and verification, threat modeling and analysis, applied cryptography and blockchain, and secure system design. Expanding leading-edge cybersecurity and defense mechanisms earned KU federal National Center of Academic Excellence in Cyber Defense Education (CAE-CD) and Research (ACE-R) dual designations.



DIRECTOR: BO LUO

Dr. Bo Luo is a Professor in the Department of Electrical Engineering and Computer Science at the University of Kansas and the Director of the High Assurance and Secure Systems Center at I2S. After earning B.E. and M.Phil. degrees in Electrical and Information Engineering, Luo received his Ph.D. from the University of Pennsylvania in Information Sciences and Technology in 2008. His current research interests lie at the intersection of security and privacy and data science. In particular, he is interested in adversarial machine learning, information and security systems, IoT/CPS and hardware-enabled security, and privacy of online social networks.



MATHEMATICAL METHODS & INTERDISCIPLINARY COMPUTER CENTER (MMICC)

Researchers in the Mathematical Methods and Interdisciplinary Computing Center (MMICC) are focused on research and innovation through myriad projects that span a variety of fields, including biology, medicine, radar, and telecommunications, that aim to deliver solutions to real-world applications. Recent accomplishments at MMICC include:

- Jeni Lohofener has developed AI-enabled tools for students with learning disabilities.
- Bozenna Pasik-Duncan received the International Federation of Automatic Control's inaugural Diversity and Inclusion Award in Control Education.
- Zijun Yao co-authored a paper "On the Detectability of ChatGPT Content: Benchmarking, Methodology, and Evaluation through the Lens of Academic Writing," which was accepted to the ACM Conference on Computer and Communications Security.
- Jamie Walters is in the second year of a large collaboration to study sex differences in aging across animals, funded by a \$12M NSF biology integration institute grant.
- Morteza Hashemi received an NSF grant to develop a UAV-based tool for cellular network measurements in rural areas.
- Michael Branicky was chosen to develop a national strategic vision and research roadmap for AI Engineering as part of the NSF ERVA AI Visioning Group: Strategic Thinking for Engineering Research in the Era of Artificial Intelligence.
- Cuncong Zhong is conducting research on prediction of immunotherapy response in lung cancer patients using human gut microbiome data.
- Tyrone Duncan continues his work on Prediction for Rosenblatt processes.
- Patrick McCormick received a DARPA Young Faculty Award for his work on Enabling Spectrally Aware Cognitive RF Sensing.
- Hongyang Sun co-authored a workshop paper on "Dynamic Selective Protection of Sparse Iterative Solvers via ML Prediction of Soft Error Impacts" at SC'23: The International Conference on High Performance Computing, Network, Storage, and Analysis.
- Esam El-Araby's group has been focusing on the development and optimization of quantum algorithms and applications including free-space optical communications.
- Huazhen Fang was honored as one of four recipients of the annual University Scholarly Achievement Awards for his outstanding research in the field of advanced battery management.
- Taejoon Kim is the lead PI on an NSF Convergence Accelerator Track G Phase 2 Grant on Combatting Vulnerability and Unawareness in 5G Network Security.
- Shannon Blunt serves as Editor-in-Chief of the IEEE Transactions on Radar Systems.
- Hossein Saiedian continues his research in software engineering, information security, and computing education.

In addition to these and other numerous accomplishments at MMICC, I gave a plenary talk at the XI International Conference on Adaptive Modeling and Simulation in Gothenburg, Sweden, on my research on the generation of high-order curvilinear meshes for biomedical applications.

Suzanne

MMICC IN FOCUS

The Mathematical Methods and Interdisciplinary Computing Center (MMICC) MMICC's mission is to advance the application of mathematical methods and computational techniques across various domains of science, engineering, and beyond. MMICC is dedicated to promoting interdisciplinary research, facilitating educational opportunities, and fostering a collaborative environment that empowers individuals and teams to solve complex problems through mathematical insights and computational expertise.



DIRECTOR: SUZANNE SHONTZ

Dr. Suzanne Shontz is a Professor in the Department of Electrical Engineering and Computer Science at the University of Kansas and the Director of the Mathematical Methods & Interdisciplinary Computer Center at I2S. After completing her undergraduate education at the University of Northern Iowa, Shontz earned an M.S. in Applied Mathematics and Computer Science followed by a Ph.D. in Applied Mathematics from Cornell University. Her primary research interests are computational- and data-enabled science and engineering. More specifically, parallel scientific computing with a focus on unstructured mesh, numerical optimization, model order reduction, and numerical linear algebra methods and their applications to computational medicine, electronic circuits, and materials.

CENTER FOR CYBER-SOCIAL DYNAMICS (CCSD)

Since the creation of the Center for Cyber-Social Dynamics (CCSD) in 2022, thanks in large part to I2S' Research Rising initiative, our faculty and students have produced significant scholarship towards our research program. The goal of our center is to critically assess the impact of emerging technologies on established social norms. We aim to understand and evaluate the ways in which our lives are shaped by the ubiquitous and pervasive influence of computing technologies. This understanding will allow our communities to mindfully and ethically shape technologies to promote human flourishing.

We also aim to facilitate conversation and collaboration between the builders of technology and researchers from anthropology, the arts, economics, history, political science, philosophy, psychology, sociology, and other fields in the social sciences and humanities. We welcome collaborations from around the world and are currently engaged in five major research themes: (1) Loneliness and Artificial Intelligence; (2) Politics, Knowledge, and Data; (3) Rethinking Privacy and Bias; (4) Education and Machine Learning; and (5) Norms, Resilient Institutions, and the Social Attack Structure.

Recently, CCSD was awarded a grant from the National Security Administration for our work on the vulnerabilities in online social environments. The project takes an interdisciplinary approach to understanding how information warfare disrupts social norms and institutions, with a focus on the role of internet technologies and sophisticated forms of social hacking that target critical social institutions. The attacks are honed on the social norms that form those institutions.

Also, in June, CCSD received a Research and Education Innovation award for funding from the Kansas Established Program to Stimulate Competitive Research, or EPSCoR. The National Science Foundation uses EPSCoR to increase research capacity in under-funded regions of the country—like Kansas.

Recent CCSD postdoctoral research achievements and contributions by Post-Doctoral Researcher Dr. Rebecca Johnston and research assistants Syed Abumusab and Sanwoolu (Shay) Oluwaseun are numerous and can be viewed on the CCSD page on the I2S website.

Public oriented work by CCSD includes an ongoing podcast that explores the effects emerging technologies have on social, physical, and digital worlds, co-hosted by assistant research professor and research program director David Tamez. Episodes feature open dialogues with technology or philosophy professionals over a broad spectrum of topics, such as the challenges of regulating large learning models; the future of human-AI partnerships in knowledge production; and the convergence of education, AI, and the future of work. They can be found on the I2s website or wherever you find your podcasts.

While we are still in our infancy, we believe that our group has, and continues to, put in significant hours in developing a coherent and robust research program. There is not enough time or space for me to provide a complete list of the work our group has accomplished in its first two years. Nonetheless, I am excited for all that is to come, and we look forward to sharing it with you all.

John

CCSD IN FOCUS

The Center for Cyber-Social Dynamics is focused on the interaction between internet technologies and society. Research initiatives focus on understanding the psychological, social, cultural, and political effects of technology. We bring expertise from the humanities and social sciences into collaborative research with engineering and design.



DIRECTOR: JOHN SYMONS

Dr. John Symons is a Professor in the Department of Philosophy at the University of Kansas and Director of the Center for Cyber-Social Dynamics (CCSD) at I2S. His area of research interest is centered in philosophy of technology with ties to formal epistemology, philosophy of psychology, and metaphysics of emergence. As Director of CCSD, Symons engages in the interdisciplinary and cross-cultural study of the relationship between Internet and data-driven technologies and society, politics, and culture in order to help our communities to mindfully and ethically shape technologies to promote human flourishing. In addition to his teaching and research work, Symons is also the host of The Cyber-Social Dynamics Podcast.

COMPUTER SYSTEMS CENTER (CSC)

At the Computer Systems Center (CSC), we are working on a broad range of systems topics, including static and run-time systems tools to improve the performance and security of software, predictable real-time software/hardware systems, embedded machine learning, datacenter computing architecture, in-memory computing, quantum computing systems, development and optimization of quantum algorithms and applications, hardware security, and trust assurance and verification of hardware.

Fellow researchers within CSC are working on multiple collaborations applied to a wide range of contexts with sponsors that include the National Science Foundation and the University of Illinois. Electrical Engineering and Computer Science (EECS) assistant professors Tamzidul Hoque and Mohammad Alian are actively involved in projects that include gamified learning of computer hardware fundamentals, hardware security education through seamless extension of existing curriculum, and ongoing development of protocol-independent multicast (PIM) and accelerated dual in-line memory module (AxDIMM) ecosystems.

Mohammad and EECS associate professor Esam El-Araby recently received prestigious awards from the National Science Foundation for their ongoing work. Mohammad's project involves work on the Near-Memory Datacenter Network while Esam's covers Unifying Heterogeneity of Extreme-Scale Cyberinfrastructures for Higher Productivity and Performance Portability.

Faculty researchers at CSC advise many MS and PhD student candidates and conduct research on a wide range of technology advancements within computer systems. Supporting our graduate student initiatives has and will continue to have an important role in CSC's development and growth.

Prasad



DIRECTOR: PRASAD KULKAMI

Dr. Prasad Kulkarni is a Professor in the Department of Electrical Engineering and Computer Science at the University and the Director of the Computer Systems Center at I2S. After completing his undergraduate education in Computer Engineering at Poona University in India, Kulkarni earned his M.S. and Ph.D. in Computer Science at Florida State University. His research areas of interest include static and dynamic/adaptive compilers, computer architecture, and embedded systems. Kulkarni was an IBM Ph.D. Fellow in 2006 and 2007 and was the recipient of the Faculty Early Career Development Award from the National Science Foundation in 2010.



CSC IN FOCUS

The Computer Systems Center is an initiative aimed at exploring, enhancing, and innovating various facets of computer systems. This dedicated research center serves as a hub for interdisciplinary collaboration, fostering the development of cutting-edge technologies, and addressing pressing challenges in the field of computer systems.

I2S hosts a variety of student- and faculty-led events throughout the year, including the annual I2S Student Research Symposium (ISRS) and the GenCyber Summer Camp for K-12 teachers. ISRS, which is led by the I2S Student Organization, is an opportunity for graduate students to share their research and ideas with other graduate students and faculty members. In 2025, this event is expanding to include students from regional colleges and universities outside of KU. The event is currently scheduled to take place on Jan. 24, 2025, at the Apollo Auditorium in Nichols Hall.

The annual GenCyber Camp for Teachers, which is supported by the National Security Agency (NSA) and the National Science Foundation (NSF), offers K-12 teachers a series of lectures, labs, discussions, and other programs geared toward cybersecurity education.

The 2024 Cyber-Gen Camp will take place from July 22-26 at Nichols Hall.

On April 4, 2024, I2S faculty joined representatives from the Federal Bureau of Investigation to host the second annual FBI & KU Cybersecurity Conference. The conference brought together experts in the field of cybersecurity from around the country and highlighted the most up-to-date practices, research, and information in cybersecurity, as well as the FBI's latest analysis of the threats we face in cyberspace. Key Speakers that headlined the conference include FBI Director Christopher A. Wray, U.S. Senator for Kansas Jerry Moran, KU Chancellor Douglas A. Girod, Bernard Global Chief Executive Officer Steven Bernard and I2S Director Perry Alexander.



Perry Alexander participates in a panel discussion at the 2024 FBI & KU Cybersecurity Conference



Awards & Funded Projects Snapshot

I2S faculty and graduate researchers are routinely the recipients of funding awards and recognition. For the latest on the institute's awards, visit our website at its-research.ku.edu.

RSL First Alternate – 2023 IEEE Radar Conference
Recipients: Jon Owen, Christian Jones
April 17, 2023

RSL Top 5 Finalist – 2023 IEEE Radar Conference
Recipients: Bahozhoni White, Matthew Heintzelman
April 17, 2023

RSL Second Place – 2023 IEEE Radar Conference
Recipients: Thomas Kramer, Erik Biehl, Matthew Heintzelman
April 17, 2023

Honeywell Grant
Recipient: Perry Alexander
Financial: \$199,153
January 27, 2023

National Science Foundation Career Development (CAREER) awards
Recipient: Mohammad Allen
Financial: \$533,000
May 25, 2023

NSF Convergence Accelerator Track G: Combating Vulnerability and Unawareness in 5G Security Network
Primary Investigator: Taejoon Kim
Funding Total: \$5,000,000
Sponsor: National Science Foundation

Collaborative Research: Frameworks: Automated Quality Assurance and Quality Control in the StraboSpot Geologic Information System for Observational Data
Primary Investigator: Drew Davidson
Funding Total: \$1,886,298
Sponsor: National Science Foundation

National Pathway to Success (NPS)
Primary Investigator: Tamzidul Hoque
Funding Total: \$126,842
Sponsor: Wright State University

IMR: MT: AirScope: A Versatile and Programmable UAV Platform for End-to-End Cellular Network Measurements in Rural Environments
Primary Investigator: Morteza Hashemi
Funding Total: \$600,000
Sponsor: National Science Foundation

GenCyber Summer Camp at KU – Inspiring the Next Generation of Cyber Stars
Funding Total: \$149,870
Primary Investigator: Bo Luo
Sponsor: National Security Agency

Predictable and Scalable Remote Atestation
Primary Investigator: Perry Alexander
Funding Total: \$722,322
Sponsor: National Security Agency

Waveform-Diverse RF Capabilities
Primary Investigator: Shannon Blunt
Funding Total: \$2,186,643
Sponsor: Office of Naval Research

Vulnerabilities in the Social Attack Surface-How Undermining Norms Affects the Resilience of Critical Social Institutions
Primary Investigator: John Symons
Funding Total: \$201,852
Sponsor: National Security Agency

Fortifying the Cyber and Electromagnetic Frontlines: Establishing a Virtual VICEROY Institute in Midwest
Primary Investigator: Fengjun Li
Funding Total: \$1,499,983
Sponsor: Griffiss Institute

Enabling Spectrally Aware Cognitive RF Sensing
Primary Investigator: Patrick McCormick
Funding Total: \$1,000,000
Sponsor: Defense Advanced Research Projects Agency

Collaborative Research: EAGER: AI-Assisted Just-in-Time Scaffolding Framework for Exploring Modern Computer Design
Primary Investigator: Mohammad Alian
Funding Total: \$200,000
Sponsor: National Science Foundation

Collaborative Research: CDS&E: An Experimentally Validated, Interactive, Data-enabled Scientific Computing Platform for Cardiac Tissue Ablation Characterization and Monitoring
Primary Investigator: Suzanne Shontz
Funding Total: \$296,286
Sponsor: National Science Foundation

Coherent Space-Time Varying Electromagnetic Structures
Primary Investigator: Alessandro Salandrino
Funding Total: \$450,335
Sponsor: Air Force Office of Scientific Research

Anytime Perception and Control Intelligent and Safe Advanced Air Mobility
Primary Investigator: Heechul Yun
Funding Total: \$19,272
Sponsor: Wichita State University

Collaborative Research: CNS Core: Medium: TeTON: A Testbed and a Toolkit for Expediting Investigation of and Accelerating Advancements in All-Optical Neural Networks
Primary Investigator: Rongqing Hui
Funding Total: \$194,913
Sponsor: National Science Foundation

Bill: IISAGE - Discovering the Mechanisms and Evolution of Aging Differences Between Females and Males
Primary Investigator: Jamie Walters
Funding Total: \$984,257
Sponsor: University of Alabama-Birmingham

CAREER: A Novel Bioinformatic Infrastructure for Metagenome Assembly and Functional Annotation
Primary Investigator: Cuncong Zhong
Funding Total: \$738,398
Sponsor: National Science Foundation

CAREER: SaTC: Bridging the Gap Between Research and Practice: Automation and Metrics in Security Operation Centers
Primary Investigator: Alexandru Bardas
Funding Total: \$524,322
Sponsor: National Science Foundation

Collaborative Research: SHF: Small: Learning Fault Tolerance at Scale
Primary Investigator: Hongyang Sun
Funding Total: \$124,999
Sponsor: Vanderbilt University

The background features a dark blue globe with a network of white lines and dots overlaid on it, suggesting a global network or data flow.

KU INSTITUTE FOR INFORMATION SCIENCES

The University of Kansas

i2s-research.ku.edu

i2s-info@ku.edu