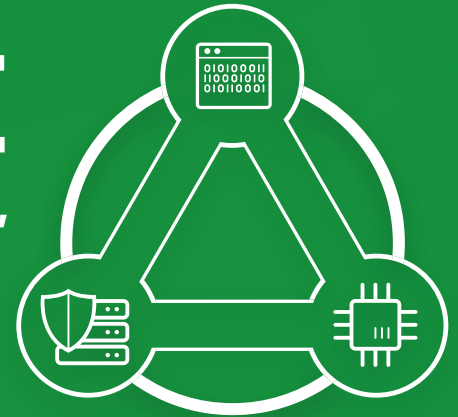


WE INTEGRATE

HARDWARE, SOFTWARE, AI ALGORITHMS,
AND DATA FOR SCALABLE MACHINE
LEARNING AND SECURITY



OUR SOLUTIONS ARE AUTOMATED **AND** CUSTOMIZED

HARDWARE ACCELERATION



SYSTEM-OPTIMIZATION ENGINES

REAL-TIME DATA ANALYTICS

Hardware, software and algorithm co-design for real-time data analytics. Our customized performance optimization engine is automated and works across platforms, from low-power sensors to data centers and the cloud. Our solutions integrate adaptive data collection processes with training, learning, and inference in real-time and streaming applications.

PARADIGM SHIFT IN DEEP LEARNING

Automated acceleration and adaptive retraining of deep learning. Our framework allows for training of deep learning networks that are platform independent, and scale from sensors to mobile to data centers. We introduced a paradigm shift when we built and demonstrated the first training of deep learning on mobile (edge) devices.

SECURITY AND PRIVACY FOR CYBER-PHYSICAL SYSTEMS

To secure cyber-physical systems, we fully consider hardware, software, algorithms and data – and their isolation and interactions. We offer new approaches to security and privacy. Safe machine learning / defense against adversarial attacks, secure embedded medical devices, and privacy-preserving computing (DNA, learning, biometrics) are examples.

Our work is crucial for developing scalable and secure machine intelligence for cloud computing, data centers, Internet of Things, and many other applications including surgical robots, drone-based search and rescue, imaging systems and low-power sensor networks.

CENTER FACULTY

Farinaz Koushanfar

Center Co-Director

Accelerated and domain-specific machine learning (ML), safe and secure ML, private ML, embedded and hardware systems, security and trust

Tara Javidi

Center Co-Director

Practical solutions with theoretical guarantees for information acquisition, processing, and communication

Hadi Esmaeilzadeh

Associate Director for Industry Research

Immersive machine intelligence, full-stack solutions

Kamalika Chaudhuri

Trustworthy machine learning, learning and active learning theory

Pamela Cosman

Image and video compression, processing, and wireless communications

Andrew Kahng

Physical design of VLSI

Ryan Kastner

Embedded security, hardware and FPGA acceleration; FPGAs; reconfigurable computing

Siavash Mirarab

Scalable analysis of large-scale biological datasets

Truong Nguyen

Image and video processing on low-power, low-cost systems

Alon Orlitsky

Estimation, learning, and speech processing

Piya Pal

High dimensional statistical signal processing, high resolution imaging

Bhaskar Rao

Signal processing, estimation theory, speech processing

Tajana Simunic Rosing

Embedded system design and software optimization, power management

Deian Stefan

Systems, security, and programming languages

Nuno Vasconcelos

Statistical signal processing, computer vision, machine learning, multimedia

BENEFITS OF PARTNERSHIP

- Influence and advise industry-relevant research priorities
- Recruit our top students
- Seat on the Center Advisory Board
- Access to multidisciplinary researchers with shared focus
- Embed a Visiting Industry Fellow in our labs
- Industry-faculty-student research teams
- Fast-track research agreements
- Access to lab-to-market business and technology accelerators
- Invitations to Research Summits

LEADERSHIP

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