The mission of the SenSIP (Sensor, Signal and Information Processing) Industry Consortium is to perform use-inspired research and train students in sensor and information systems, digital signal and image processing, wireless communications, networks, and machine learning.
Become a Member of SenSIP Industry Consortium and NSF I/UCRC.

Benefits:

- Cost effective and reduced overhead research.
- Projects co-defined/co-advised by industry members and faculty.
- Consortium students spend time both at ASU and industry site.
- Privileged access to student portfolios; Student accessible only to consortium members.
- Industry members tap on SenSIP faculty expertise; ASU knowledge base in signal processing, communications, sensor networks, software and hardware, speech, video and machine learning.
- Access to algorithms/tools/documents useful to the industry community.
- The SenSIP consortium can create customized courses for the industry members.
- SenSIP faculty organize and give seminars on topics defined by industry members.
- One half day short course per year on topics covered by our faculty.
- SenSIP Website access available to industry members with repository of software tools.
- Conference reports from conference visits in target areas.
- Organize training workshops on sensors, DSP, communications.
- Membership in the industry advisory board where industry members defines research directions.
- Recruiting advantage by developing relationships with students at an early stage.
- Program involves over twenty faculty with full research facilities.
- SenSIP Graduate training certificate in sensors and signal processing.
- Access to Workforce Training Programs NSF REU, RET, IRES and MedTech Ventures.

Industry Consortium Membership History

Phase 1 2007-2015 / Phase 2 2016-2021
## Research Areas

### Security and Defense Applications
- Integrated Sensing Systems
- Sensor Networks
- Radar, Sonar, and Array Signal Processing
- Machine Learning for Sensor Arrays
- Waveform Design
- Video Exploitation
- Object Recognition
- Beamforming
- Surveillance

### Image and Signal Processing
- Digital Signal Processing
- Microphone Arrays
- AI-enabled Sensors
- Low Power Algorithms
- DSP for Biosensing
- Data Mining
- Sensors for IoT and Smart Cities
- Autonomous Vehicle Sensing Systems

### Sensors and Machine Learning
- Embedded Sensors and Machine learning
- Tiny or Edge Machine Learning
- Computational Camera Sensors
- Positive Unlabeled Learning
- Compressive Sensing
- Neural Networks
- Deep and Reinforced Learning
- Quantum Machine Learning

### Wireless Systems
- Information Theory and Networks
- MIMO Systems
- Adaptive Antennas
- 5G+ Systems
- Network Security
- Machine Learning for MIMO
- Software Defined Radio

### Deep Learning and Vision Research
- TinyML and Embedded Computer Vision
- Privacy-preserving visual health monitoring
- Intelligent cameras for the future
- CMOS Image Sensors
- Low Power Object Detection
- Surveillance Algorithms
- Pruned Deep Neural Networks

### Algorithms, Hardware and Software Systems
- DSP Chips and FPGAs
- Java Systems and J-DSP
- MATLAB Testbeds
- Java, iOS and Android for controlling sensor networks
- Python & J-DSP Machine Learning
- Voice Analysis and Recognition
- Adaptive Noise and Echo Cancellation
- Machine Learning on Mobile Phones

### Energy and Sustainability
- Fault detection
- Panel Diagnostics
- Inverter Monitoring
- PV Array GUI
- Shading Prediction
- Machine Learning for Solar Energy Maximization
- Deep Learning for PV Fault Classification
- Deep Neural Nets for Connection Topology Optimization

### BioMedical Research and Mobile Health
- Health Monitoring
- BioInformatics
- Brain Dynamics
- Contact-less Vitals Monitoring
- Physiological Signal Analysis
- Immuno-signature Classification
- Flexible Sensors and Biosensors
- Voice Analysis for Lung Disease Detection
- COVID-19 Detection Research
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Industry Consortium Projects
- Echo Cancellation, Acoustic Technologies
- DSP Algorithms for Sensors, National Instruments
- Image Exploitation for Radar, Lockheed Martin
- Sensor Networks, LG, 5G Research, Sprint
- Sensors for Solar Panel Monitoring, Poundra
- MIMO Radar, Raytheon
- Machine Learning of Sensor Data, NXP
- Wireless Sensors for PV Systems, ACT
- Space Based Imaging, Alphacore
- Image Scene Analysis, Intel
- Machine Learning for Radar, PSG
- Flexible Sensors and Algorithms for IoT Applications, NXP
- Cloud Movement Prediction for PV Monitoring, Energy Wireless
- Machine Learning for MIMO Systems, SensMACH
- Machine Learning for Computational Cameras, Qualcomm
- Machine Learning for Power Adaptors, ON Semi
- COVID-19 Hotspot Estimation, NCSS

Federal and Industry Projects
- NSF: IGERT: Arts & Engineering Initiative on Experiential Media
- NSF EXP: DSP Algorithms for Silicon Ion-Channel Sensors
- NSF CCF , Biomedical Innovations Using Agile Sensing
- NSF FRP; Sensor Fusion for Net Centric Applications
- Global Engagement Project with the University of Cyprus KIOS Center
- NIH: Collaborative Grant, Wearable Nanosensor Array
- NSF: Co-Exploration of Scalable Software Defined Radio
- British Council & Imperial College Project: Sensor Localization
- NSF Project on Big Data & Network Security
- DARPA Project on Radar Spectrum Allocation
- NSF GOALI Project on Solar Panel Monitoring
- NIH Project on Speech and Hearing
- ONR Project on Machine Learning
- NSF International Collaboration with ITESM on sensors
- NSF Phase 2 I/UCRC - ASU SenSIP site 2016-21
- NSF CPS on Machine Learning for PV Arrays 2016-2021
- AFSR STRR 2020 on Radar Systems
- NSF SenSIP REU Site 2017-2022 on Sensors and ML
- NSF SenSIP IRES, 2019-2022 on ML for PV Arrays
- NSF SenSIP RET 2020-2023 on Machine Learning Algorithms
- NSF MRI 2020-2023 on AI for Solar Energy

Recent Accomplishments
- 20 patents / 40 disclosures last 7 years
- NSF REU Site - 30 Students trained in Sensors
- Major NSF Cyber-Physical Grant on Solar Energy
- 5G LTE dedicated SenSIP Facility
- Synergies with MedTech Ventures
- 18 kW / 104 Panel Solar Array at MTW
- SenSIP Graduate Certificate on Sensors
- Industry Short Course in Machine Learning
- MOUs signed with 5 international institutions
- SenSIP Course Module on Sensors & IoT
- Three NSF workforce development programs

Partner Universities

Integrated Algorithms and Sensors

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http://sensip.asu.edu