

## Research areas

The School of Computing and Augmented Intelligence, part of the Ira A. Fulton Schools of Engineering at ASU, serves as the intersection of artificial intelligence, robotics, operations research, industrial statistics and human-computer interaction.

## A sampling of our faculty members' expertise areas:

- **Human-robot interaction.**
- **Machine learning.**
- **Artificial and augmented intelligence.**
- **Human-AI teaming.**
- **Natural language processing.**
- **Reinforcement learning.**
- **Evolutionary computation.**
- **Autonomous vehicles.**
- **Decision-making.**
- **Data mining.**
- **Social media mining.**
- **Social computing.**
- **Industrial statistics.**
- **Optimization.**
- **Statistical learning.**

## Two Fellows elected

to the Association for the Advancement of Artificial Intelligence, including one former president.

## Artificial intelligence experts

### Huan Liu

*Regents Professor, CSE*

Expertise: social media mining, feature selection, data mining

### Douglas Montgomery

*Regents Professor, IEE*

Expertise: industrial statistics, design of experiments

### Subbarao Kambhampati

*Professor, CSE*

Expertise: automated planning, human-AI teaming

### Dimitri Bertsekas

*Professor, CSE*

Expertise: reinforcement learning

### Chitta Baral

*Professor, CSE*

Expertise: natural language processing

### Stephanie Forrest

*Professor, CSE*

Expertise: evolutionary computation

### Aviral Shrivastava

*Professor, CSE*

Expertise: computers and composition, autonomous vehicles, computer architecture and design

### Baoxin Li

*Professor, CSE*

Expertise: computer vision and machine learning

### Ross Maciejewski

*Professor, CSE*

Expertise: visualization, graph mining, human-computer interaction

### Pitu Mirchandani

*Professor, IEE*

Expertise: optimization, decision-making

### George Runger

*Professor, IEE*

Expertise: statistical learning, data mining

### Teresa Wu

*Professor, IEE*

Expertise: distributed decision-making, image processing

### Heni Ben Amor

*Associate professor, CSE*

Expertise: robotics, machine learning, artificial intelligence

### Giulia Pedrielli

*Associate professor, IEE*

Expertise: simulation-based optimization, manufacturing

### Paulo Shakarian

*Associate professor, CSE*

Expertise: artificial intelligence, logic, machine learning

### Yalin Wang

*Associate professor, CSE*

Expertise: computer vision, medical imaging

### Yezhou Yang

*Associate professor, CSE*

Expertise: cognitive robots, robot perception

### Chris Bryan

*Assistant professor, CSE*

Expertise: visualization, human-computer interaction

### Geunyeong Byeon

*Assistant professor, IEE*

Expertise: operations research, decision-making

### YooJung Choi

*Assistant professor, CSE*

Expertise: probabilistic reasoning, fairness, explainability

### Hannah Kerner

*Assistant professor, CSE*

Expertise: AI for food security, climate change, space exploration

### Kookjin Lee

*Assistant professor, CSE*

Expertise: scientific machine learning, computational physics

### Siddharth Srivastava

*Assistant professor, CSE*

Expertise: sequential decision-making, probabilistic programming

### Chaowei Xiao

*Assistant professor, CSE*

Expertise: adversarial machine learning, large language models

### Yu Zhang

*Assistant professor, CSE*

Expertise: human-aware planning, human-robot interaction

## Global AI reach

**Subbarao Kambhampati**, widely renowned as a global thought leader and an authority on AI, is regularly called on to contribute his perspective to major news outlets, including New York Times, New York Post, Vice, Fox News, The Hill and Eenadu, the largest-circulating Telugu newspaper in India, to name a few.

A Fellow and former president of the Association for the Advancement of Artificial Intelligence, or AAAI, Kambhampati also collaborated with 19 current and former presidents of the association to issue a statement addressing how AI professionals can work together to manage the booming progress in the field amid advancements with ChatGPT.

## Contributions to the field

**Hannah Kerner** is collaborating with NASA Harvest to develop a food security dashboard in Maui County, Hawaii. The dashboard uses Earth observations and AI to equip small growers with the tools to address local agricultural challenges, helping them combat food insecurity in their communities.

**Giulia Pedrielli** is conducting research as part of ASU's Manufacturing, Automation and Data Engineering, or MADE, Science and Technology Center, incorporating AI-based software capabilities and digital twin technology into the future of manufacturing.

**Yalin Wang** and his research group presented two papers at the 2023 Information Processing in Medical Imaging conference, one of the most prestigious medical imaging conferences. The team discussed their research on developing artificial intelligence algorithms to study brain and retinal imaging problems.

**Teresa Wu** and her research team, in collaboration with Banner Health, are combining their expertise in medical imaging, machine learning, informatics and computer science to improve the treatment of Alzheimer's disease.

**Chaowei Xiao** has been awarded the 2022 Association for Computing Machinery Gordon Bell Special Prize for High Performance Computing-Based COVID-19 Research for his work on an interdisciplinary team project, "GenSLMs: Genome-Scale Language Models Reveal SARS-CoV-2 Evolutionary Dynamics." The prize recognizes outstanding research to understand the COVID-19 pandemic through the use of high-performance computing.

**Led by Director Ross Maciejewski**, the Center for Accelerating Operational Efficiency — a Department of Homeland Security Center of Excellence — develops and applies advanced analytical tools and technologies to enhance planning, information sharing and real-time decision-making in homeland security operations.

## Addressing emerging technologies

**ASU experts are contributing to the conversation amid the quickly evolving landscape of ChatGPT and other emerging AI technologies.**

Faculty members across the School of Computing and Augmented Intelligence are regularly requested to address concepts like ChatGPT and offer their perspectives on other content-generating AI technologies in articles that appeared in The State Press, ASU's award-winning, student-run news organization, and ASU News, the university's multimedia news and information platform. Some professors offer their perspectives on emerging technologies in engaging thought pieces. **Paulo Shakarian** is an editor and regular contributor to Towards NeSy, a column on Medium.com where he lends his perspectives on topics such as neurosymbolic AI and how it can change autonomous vehicles.

