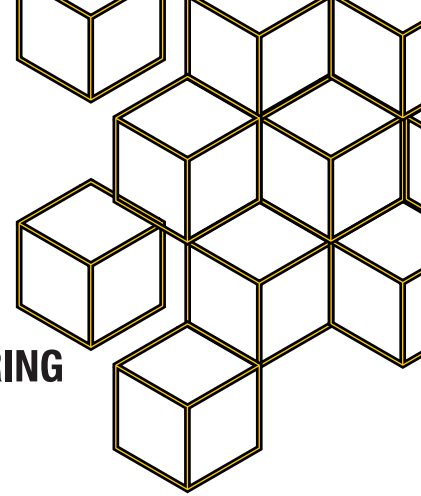


2022-  
2032



**COMPUTER SCIENCE AND ENGINEERING**  
SCHOOL OF ENGINEERING AND  
COMPUTER SCIENCE

OAKLAND UNIVERSITY



# Strategic Plan



Department of Computer Science & Engineering  
School of Engineering & Computer Science  
<https://cse.secs.oakland.edu>  
115 Library Drive  
Rochester, MI 48309

# MISSION VISION & VALUES



## » Our Mission

Empower everyone to learn cutting edge computing skills through hands-on and foundational education and research to meet real-world challenges in Michigan and beyond.

## » Our Vision

To be a department of choice for anyone in Michigan and beyond who wants to use computing to positively impact their community.

## » Our Values

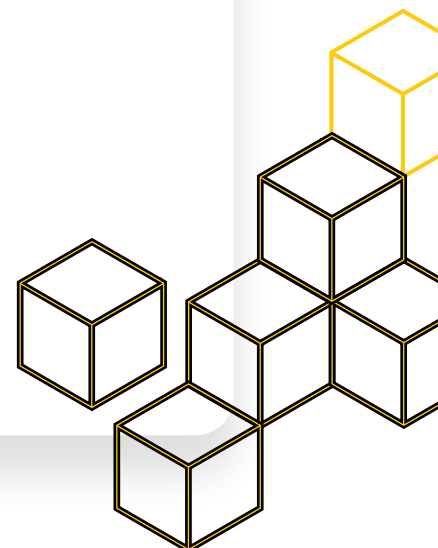
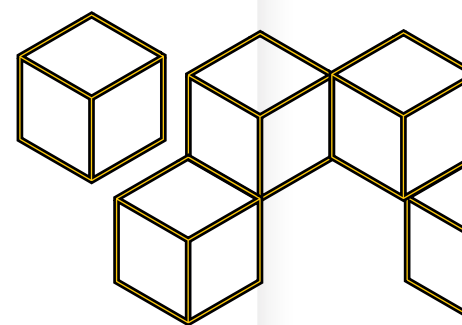
Transparency | Fairness | Diversity | Equity | Inclusion | Respect | Integrity | Shared Governance | Excellence | Responsibility | Flexibility | Freedom | Care

## Reimagining Oakland University

Our strategic plan is inspired by the exciting vision of “Reimagining Oakland University” to 1) partner with industry and local community in both education and research and be flexible and adaptable to meet their needs; 2) be recognized as strong research and scholarly environment; and 3) enhance our visibility as the university of choice.

## Growing Michigan’s Workforce

As currently the largest department at OU, CSE is committed to growing the Michigan’s workforce in the critical areas of computing including artificial intelligence, cyber security, software engineering and beyond.



# Undergraduate Programs



## Undergraduate Programs

Our ABET accredited undergraduate programs are designed to train computer scientists, information technologists, data scientists and engineers, AI engineers, cyber security engineers and software engineers for successful careers with strong hands-on capabilities.

**BS in Computer Science**

**BS in Information Technology**

**BS in Data Science**

**BS in Artificial Intelligence**

**BS in Software Engineering**

**Minor in Computer Science**

**Minor in Artificial Intelligence**



### » Overall Goal

To continue to offer relevant action-based undergraduate education that is responsive to state and national needs for computing professionals. We train the workforce of tomorrow that Michigan needs today.

### » Objectives (O)

- O1:** Equip students with the required theoretical concepts and practical skills in computing that are fundamental to their future careers.
- O2:** Provide a diverse environment for students to work collaboratively.
- O3:** Involve students in the generation of new knowledge and interdisciplinary research.
- O4:** Provide students modular, dynamic and flexible learning environments to prepare them for their future careers.

### » Strategic Plan

Offer flexible paths, concentrations, and tracks for students to satisfy market needs based on our expertise in software engineering, artificial intelligence, data science and beyond. (O1-O4)

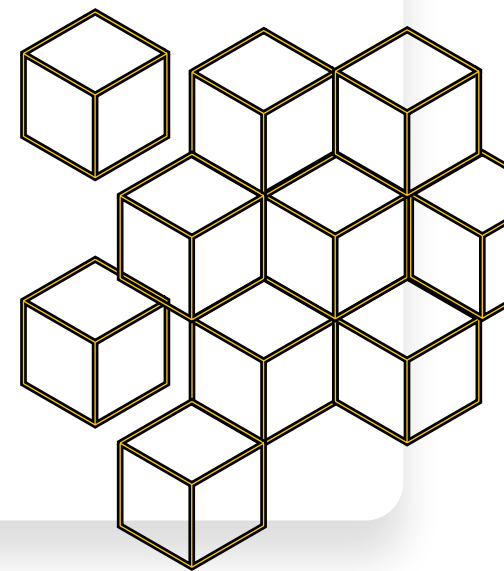
Offer new BS programs, certificates, and post-bacc programs in relevant areas for industry and beyond. (O1, O4)

Integrate experiential learning and undergraduate research into our courses. (O1-O4)

Expand our offerings by hiring a diverse body of faculty and students, as well as maintain an inclusive learning environment via various events, competitions and outreach activities. (O2)

Expand undergraduate research opportunities via REU sites and scholarships. (O1, O4)

Offer flexible learning modalities. (O2, O4)





## Graduate Programs

Our graduate programs offer a modern curriculum and research-based training leading to MS and PhD degrees in several CSE areas, including core computer science, software engineering, IT, cyber security, AI, and more.

**MS in Computer Science**

**MS in Information Technology & Software Engineering**

**MS in Cyber Security**

**MS in AI**

**MS in Data Science**

**Stackable Certificates in AI and Data Science**

**PhD in Computer Science & Informatics**

### » Overall Goal

To achieve local, state and national recognition for training graduate students with vision and skills to become technology leaders that can solve problems, communicate and educate, deliver innovative solutions and discover new knowledge through research.

### » Objectives (O)

- O1:** Train students to address relevant problems for industry and society in areas of critical need.
- O2:** Train students to become independent researchers and publish in top research venues.
- O3:** Train students to deliver high quality presentations of their research ideas.
- O4:** Support our graduate students to transition their research work to make industry/society impact via research internships and large-scale validations.
- O5:** Enhance entrepreneurship and critical thinking training to better prepare our students for technology transfer.
- O6:** Enhance the visibility of our graduate programs.

### » Strategic Plan

Attract & retain high quality graduate students. (O1-O5)

Offer multiple new graduate programs and stackable certificates in relevant areas for industry and beyond. (O1, O5)

Offer flexible learning modalities. (O1, O3)

Educate students to recognize and perform high quality research that is appropriate for top venues. (O1-O5)

Provide support, including scholarships, seminars and training, for them to publish and present at top venues. (O1, O2, O4)

Train students to write external grant applications and engage in startup opportunities. (O2, O4)

Support students in applying to and participating in internships. (O1-O4)

Extensive outreach with local industry and beyond about the high quality of our graduate programs. (O6)

# Graduate Programs



# Research & Innovation



## Research & Innovation

We are expanding our research programs in CSE and its interactions with other fields. We seek to contribute to fundamental advances in computer science and engineering needed to address grand challenges for industry and society, and increase the economic competitiveness of the state of Michigan and the US.

## Priority Research Areas

artificial intelligence & virtual reality | big data | cloud computing | computational social science | bioinformatics & medical informatics | edge computing | cybersecurity | computer vision & deep learning | human computer interaction | logic programming | machine learning | software testing | software engineering | multimedia information processing | programming languages | natural language processing | computer architecture | computer networks



### » Overall Goal

To perform world-class research in several areas of computing, including software engineering, artificial intelligence, data science, cybersecurity, human computer interaction, computer systems, and other areas of national importance.

### » Objectives (O)

- O1:** Increase the ranking of the department and expand our key areas of expertise.
- O2:** Improve the size and quality of our graduate programs.
- O3:** Expand partnerships with industry in research collaborations.
- O4:** Engage our faculty and students in more cross-disciplinary research and technology transfer.
- O5:** Enhance the visibility of our research nationally and internationally.

### » Strategic Plan

- Recruit and retain exceptional faculty, graduate students and support staff. (O1-O4)
- Secure funding from diverse external resources. (O1-O4)
- Create research development pipeline practices including brainstorming, collaborative research, peer review and research clusters. (O3, O4)
- Establish new research centers to enhance collaborations. (O1-O4)
- Support faculty and students to present their research work at prestigious international venues. (O1, O3)
- Build a world class research technology infrastructure. (O1-O4)
- Expand our expertise in key research areas of state and national priority. (O1, O3)
- Build mechanisms to promote transdisciplinary research. (O4)
- Organize prestigious international research conferences and events. (O5)
- Prepare highlights videos and materials to promote the research conducted within the department. (O5)

# Service, Outreach & Continuing Education



## Service, Outreach & Continuing Education

Our department is serving the local community via customized training, technology transfer, faculty startups, open-source software, partnering with K-12 teachers and students, partnering with other departments at OU, broadening participation in STEM disciplines, and partnering with external communities for events and activities.

### » Overall Goal

To increase the diversity of our community, to broaden the participation of underrepresented groups, to provide extensive critical training for industry and to provide an inclusive, synergistic environment.

### » Objectives (O)

**O1:** Engage with more K-12 students and teachers in computer science.

**O2:** Increase our partnerships with local industry.

**O3:** Contribute to setting directions in local, state, and national policies related to computing.

**O4:** Collaborate with local industry and beyond to provide continuing education opportunities.

### » Strategic Plan

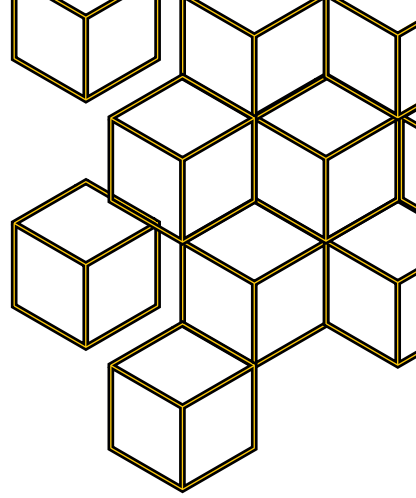
Expand outreach programs to traditionally underrepresented groups in computing. (O1)

Join relevant national and state level panels and computer science committees, including MEDC. (O3)

Engage local K-12 schools, especially in areas related to computing literacy. (O1)

Increase partnerships with industry via internships, senior design projects, and startups. (O2)

Provide new, extensive non-credit certificate programs through Oakland University's PACE program, customized based on the needs of industry in Michigan and beyond (O4)



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