UPDATE ON THE FUTURE OF COMPUTING AT MICHIGAN TECH

APRIL 08, 2019
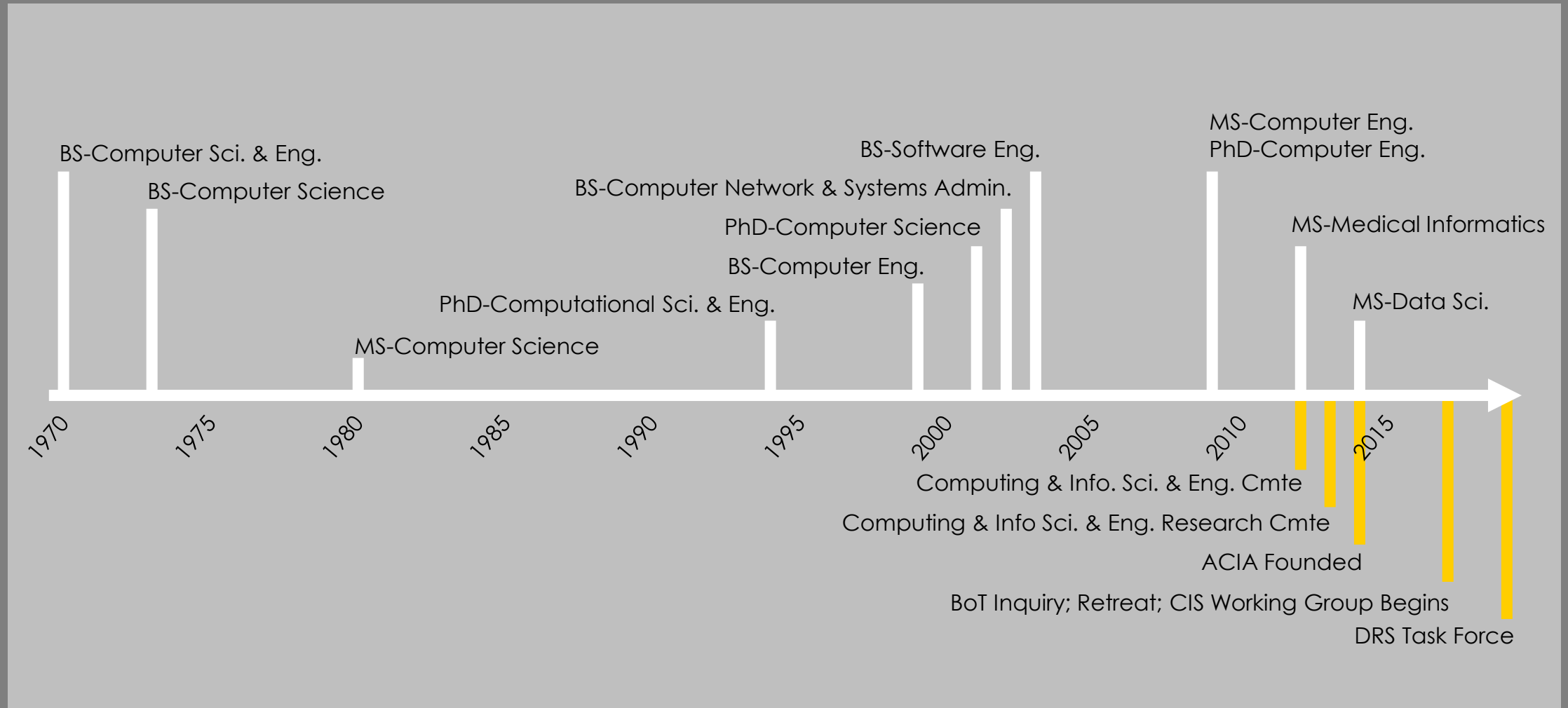
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STARTING WITH A LITTLE HISTORY....

PANORAMIC VIEW OF THE MICHIGAN COLLEGE OF MINES CAMPUS HOUGHTON, MICHIGAN.

Courtesy of the MTU Archives

TIMELINE

2012: COMPUTING AND INFORMATION SCIENCES AND ENGINEERING AT MICHIGAN TECH

MEMBERS:

- CHAOLI WANG
- GUY HEMBROFF
- JEAN MAYO
- LEONARD BOHMAN
- SAEID NOOSHABADI
- XINLI WANG

CHARGE:

- EXAMINE THE ORGANIZATION OF MICHIGAN TECH'S ACTIVITIES WITHIN THE NEXUS OF ELECTRICAL AND COMPUTER TECHNOLOGIES

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2013: COMPUTING AND INFORMATION SCIENCES AND ENGINEERING RESEARCH (CISE) COMMITTEE

MEMBERS:

- Bo Chen
- Chaoli Wang
- Mark Rouleau
- Tim Havens
- Xinli Wang

CHARGE:

- Investigate research areas of current national & international interest & importance

- Investigate funding opportunities that can be best addressed by collaborative teams

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2013: COMPUTING AND INFORMATION SCIENCES AND ENGINEERING RESEARCH (CISE) COMMITTEE

RECOMMENDATIONS:

1. Establish a formal Division of Computing

2. Have a full-time administrator

   - Lead collaborative research

   - Oversee curriculum

   - Strengthen division internally and externally

3. Pursue external funding for professorships & buildings

4. Add faculty in support of interdisciplinary computing

5. Increase use of Superior among non-traditional users

6. Support funding agency visits

7. Internal funding for computing-related research

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2017-2018: COMPUTING AND INFORMATION SCIENCES WORKING GROUP

MEMBERS:

- DAN FUHRMANN

- LAURA BROWN

- MARI BUCHE

- JIM FRENDEWEY

- TIM HAVENS

- MYOUNGHOON JEON

- ROGER KIECKHAFER

- BEN ONG

- MIN SONG

CHARGE:

- DEVELOP RECOMMENDATIONS DESIGNED TO PROMOTE GROWTH (IN SIZE AND QUALITY) OF DEGREE PROGRAMS AND RESEARCH PORTFOLIO IN CIS (IN THE BROADEST SENSE)

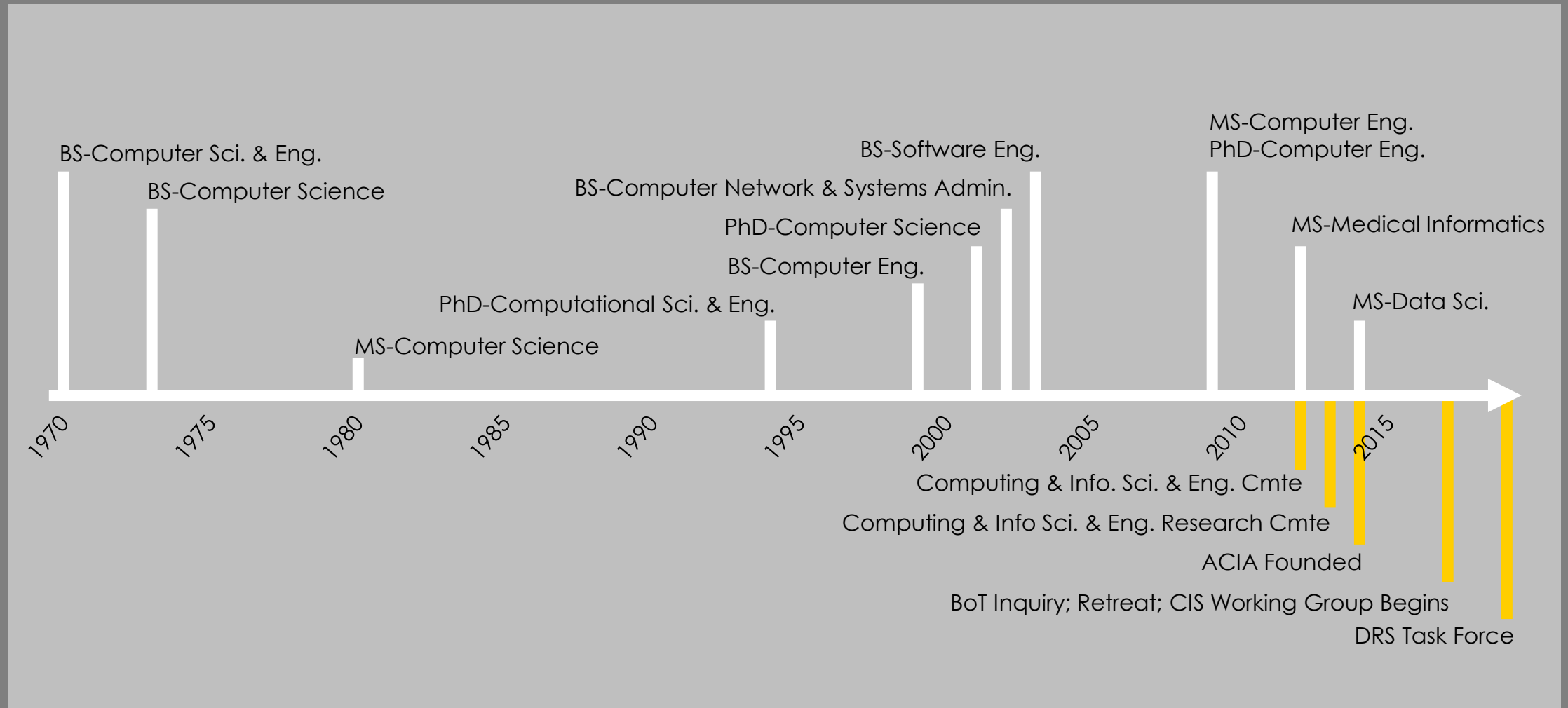**Michigan Technological University**
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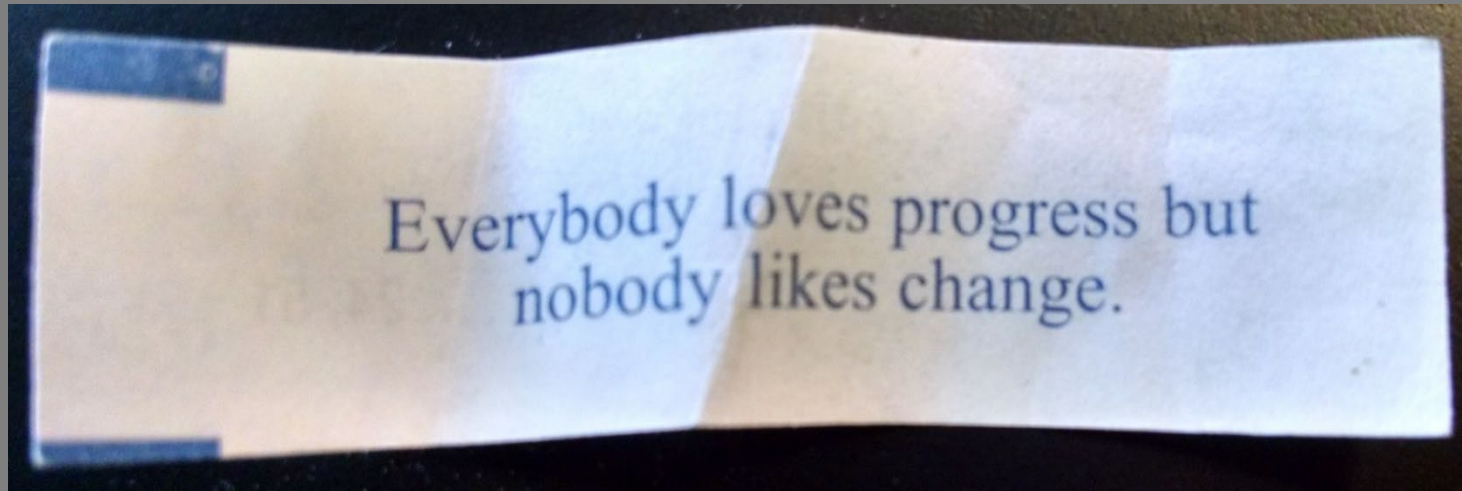# 2017-2018: COMPUTING AND INFORMATION SCIENCES WORKING GROUP

RECOMMENDATIONS:

1. Form a new Unit with a Dean
2. Determine structure of unit
3. Collaborate across units
4. Publicize new unit
5. Attract and invest resources

6. Charge the new unit to take responsibility for increasing the level of computer literacy university-wide.
7. Continue to move forward during 2018-2019

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TIMELINE

BS-Computer Sci. & Eng.

BS-Computer Science

MS-Computer Science

PhD-Computational Sci. & Eng.

BS-Computer Network & Systems Admin.

PhD-Computer Science

BS-Computer Eng.

BS-Software Eng.

MS-Computer Eng.
PhD-Computer Eng.

MS-Medical Informatics

MS-Data Sci.

1970 1975 1980 1985 1990 1995 2000 2005 2010 2015

Computing & Info. Sci. & Eng. Cmte

Computing & Info Sci. & Eng. Research Cmte

ACIA Founded

BoT Inquiry; Retreat; CIS Working Group Begins

DRS Task Force

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WE ARE HERE:

Everybody loves progress but nobody likes change.

WHY A COLLEGE OF COMPUTING?

1. Respond to disruptive forces in technology, industry and society (Industry 4.0); better prepare students for the future and enable growth and success for all of Michigan Tech.

2. Underserved market of students with interests in computing, and computer science.

3. Consolidate existing programs and bring more visibility to computing education and research at Michigan Tech.

4. Join the vanguard of 12-15 other forward-thinking universities in the US

(from CIS Working Group Final Report, May 2018)

VALUE

IMPACT

SIZE

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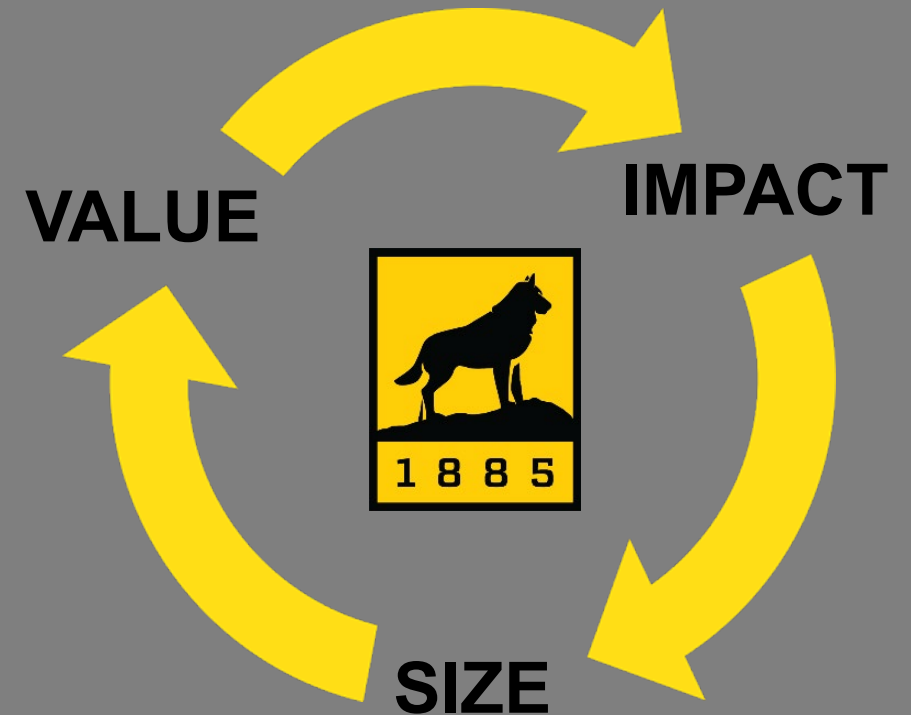
COMPUTING IS CONNECTED

TECHNOLOGIES OF THE FUTURE ARE CONNECTED TO SEVERAL DOMAINS

- ELECTRONICS
- AUTOMOTIVE
- INFRASTRUCTURE
- TRANSPORTATION
- FINANCE
- MEDICINE
- BIOLOGY
- CHEMISTRY
- PHYSICS
- SOCIAL SCIENCES

COMPUTING TOUCHES EVERYTHING

AUTONOMOUS VEHICLES

- IS IT A CAR OR IS IT A COMPUTER? WHICH IS THE COMMODITY – THE DRIVE TRAIN OR THE SOFTWARE?

INTERNET OF THINGS

- ALL OF OUR DEVICES WILL BE NETWORKED, SENSED, AND CONTROLLED USING DISTRIBUTED DIGITAL TECHNOLOGY

CYBERSECURITY

- CONNECTED NATURE OF TECHNOLOGY RAISES A WHOLE HOST OF SECURITY ISSUES.

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COLLEGE OF COMPUTING

TEACHING

RESEARCH

CoE
CSA
SBE
SFRES
Pavlis
Honors
College
Graduate
School

Computer Engineering

Cybersecurity

Robotics & Mechatronics

Human Factors

Data Science

Computational Science & Engineering

X + Computer Science

DEGREE PROGRAMS

Computer Science (CS)
Software Engineering (SE)
Computer Network & System Administration (CSNA)
Health Informatics (HI)
Mechatronics, Electrical, and Robotics Engineering Technology (MERET)*

RESEARCH

Institute of Computing & Cybersystems (ICC)

SERVICE

General Education
Learning Center
High-Performance Computing Support

Computer Systems

Cybersecurity

Cyber-Physical Systems

Human Factors

Data Science

Computational Science & Engineering

Convergence Computing

Researchers

Michigan Tech Institutes & Centers

National & International Collaborators

COMPUTATIONAL THINKING FOR THE MODERN CONNECTED WORLD

*EET will transition to MERET (Mechatronics, Electrical, and Robotics Engineering Technology)

THANK YOU