

Midwest Instruction and Computing Symposium



April 06–07, 2018
The College of St Scholastica
Department of Computer Science

www.micsymposium.org/mics2018



MICS Mission

The **Midwest Instruction and Computing Symposium (MICS)** is a regional conference dedicated to providing an educational experience to higher education participants across the five-state region of Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin. The conference focuses on integrating computer-based technology into teaching and learning processes of all disciplines, along with incorporating the study of this technology into the curriculum. Conference activities include technical paper sessions, programming and robotics contests, a keynote address, and a Career Fair for student participants.

Keynote Speaker

*Robots everywhere! Artificial Intelligence everywhere!
What will the future be?*

Dr. Maria Gini
Department of Computer Science and Engineering
University of Minnesota

Artificial Intelligence has made incredible progress in the last few years and is reaching the point where it has the potential to impact society in major ways. In the future intelligent systems and robots will become part of our daily lives, helping us with routine tasks, handling dangerous jobs, and keeping us company. However, they could also become capable of making decisions that violate our ethical principles, take control of our lives, and disrupt society. In this talk we will explore the state of the art in intelligent systems and discuss future developments and open challenges.



Dr. Maria Gini is a Professor in the Department of Computer Science and Engineering at the University of Minnesota. She develops algorithms that allow robots to decide how to allocate tasks among themselves, explore unknown environments, work as a team in search and rescue operations, or navigate in dense crowds. She has published more than 50 journal articles, and more than 250 conference papers and book chapters.

Dr. Gini is a Fellow of the Association for the Advancement of Artificial Intelligence, a Distinguished Professor of the College of Science and Engineering at the University of Minnesota, and the winner of numerous University awards. She is Editor in Chief of *Robotics and Autonomous Systems*, and is on the editorial board of numerous journals, including *Artificial Intelligence* and *Autonomous Agents and Multi-Agent Systems*. She has a special passion for increasing the number of women and students from underrepresented groups in computer science.

Internet Access

The Wi-Fi network is named `Stormswirelessnet` and the password is `Scholastica1912`

Program Schedule

Friday, April 06		
Time	Event	Location
11:00 am – 2:30 pm	Registration	Science 3116 Commons
12:45 pm – 2:15 pm	Parallel Sessions I	See Session Schedule
2:00 pm – 5:00 pm	Mini Career Fair	Science 3119 Lounge
2:15 pm – 2:30 pm	Refreshments	Science 3116 Commons
2:30 pm – 4:00 pm	Parallel Sessions II	See Session Schedule
2:30 pm – 4:00 pm	Robot Practice	Science 2122 Auditorium
4:00 pm – 6:00 pm	Robot Contest	Science 2122 Auditorium
4:00 pm – 5:00 pm	Poster Session	Science Benedictine Commons
5:00 pm – 6:30 pm	Pizza Dinner	Science Benedictine Commons
6:30 pm – 9:30 pm	Programming Contest	Science 2122 Auditorium

Saturday, April 07		
Time	Event	Location
7:30 am – 8:30 am	Steering Committee Meeting	Science 3202
8:45 am – 10:15 am	Parallel Sessions III	See Session Schedule
10:15 am – 10:30 am	Refreshments	Science 3116 Commons
10:30 am – 12:00 noon	Parallel Session IV	See Session Schedule
12:00 noon – 1:00 pm	Keynote, Awards and Box Lunch	Science Benedictine Commons

Science 1104**Theme: Mobile Apps****Session Chair: Sayeed Sajal**

12:45 PM	Ahmed El-Saied and Wen-Chen Hu	A Location-based Service Using a Server-Side Geographical Database
1:15 PM	Drew Klein	The Application of Concepts from Multiple Courses in Creating a Useful App for the University
1:45 PM	Benjamin Zwiener	Mobile SuDoku Harvesting App

Science 1109**Theme: K-12 Education****Session Chair: Mark Fienup**

12:45 PM	Kendall Nygard, Krishna Kambhampaty, Md., Minhaz Chowdhury and Damian Lampi	Cybersecurity Materials for K-12 Education
1:15 PM	Peter Peterson, Jon Beaulieu, Mazin Jindeel, Aleksandar Straumann and Brandon Paulsen	UMDCYL and Little Python: Teaching Coding by Playing Games
1:45 PM	Jennifer Rosato, Chery Lucarelli and Jill Long	Computational Thinking for All Pre-Service Teachers

Science 1127**Theme: Machine Learning & Image Processing****Session Chair: Anne Denton**

12:45 PM	Ashby Mullin	Using Deep Learning to Examine the Classification of Historical Data Through Neural Networks: The Sudoku Puzzle
1:15 PM	Alexander Pauls and Josiah Yoder	Exploring Optimum Drop-out Rate for Classic Neural Networks
1:45 PM	Jordan Goetze	Exploring the Usefulness of Adding Auxiliary Preprocessed Image Layers with Convolutional Neural Networks

Science 1128**Theme: SW Engineering****Session Chair: Mark Hall**

12:45 PM	Jens Carter, Eric Mcdaniel, Mason Countney, Saleh Alnaeli and Warren Vaz	Quality of Engineering Computing Software Systems from Software Engineering Perspective: an Empirical Case-Study of OpenFOAM
1:15 PM	Andrew Erickson, Dennis Guster, Leena Radeke and Erich Rice	Quantum Information Systems: The State Of Post-Quantum Cryptography As A Means To Combat Shor's Algorithm
1:45 PM	Cole Nelson and Joshua Yue	SPOT: a domain-specific language for code modification

Parallel Sessions II**Friday, April 06****2:30 pm – 4:00 pm****Science 1104****Theme: 3D Modeling****Session Chair: Dan Neebel**

2:30 PM	Tyler Welander, Ronald Marsh and Md Nurul Amin	G-Code Modeling for 3D Printer Quality Assessment
3:00 PM	Andrew Jones and Jeremy Straub	Student Benefits from Participation in a NASA-mentored 3D Printing Research Project
3:30 PM	Robert Prescott and Chris Johnson	Lofting Three-Dimensional Shapes

Science 1109**Theme: Curriculum****Session Chair: Saleh Alnaeli**

2:30 PM	Jeremy Straub and Kendall E. Nygard	Creation of a Cyber Security Institute to 'Lead the Pack' in North Dakota
3:00 PM	Kendall Nygard, Vikas Kulkarni, Jagot Bhardwaj, Minhaz Chowdhury and Krishna Kambhampaty	Interactive Educational Games for Cybersecurity Education
3:30 PM	Brady Cooper and Erich Rice	Development and Delivery of Enterprise Architecture Related In-Class Labs: Current and Future States

Science 1127**Theme: Machine Learning****Session Chair: Marty Allen**

2:30 PM	Yuxin Liu, Song Chen and Mao Zheng	Using Machine Learning in Sales Predication
2:30 PM	Corbin Faidley, Robert Robinson and Stephen Hughes	Technology Assisted Review with Iterative Classification
3:00 PM	Tom Richmond and Imad Rahal	Algorithmic Composition of Classical Music through Data Mining

Science 1128**Theme: Software****Session Chair: Elena Machkasova**

2:30 PM	Joseph Stewart	Quality of Service Implementation within IEEE 802.11 DCF Interframe Space
3:00 PM	Alexander Stewart	Authentication Strategies for the Maritime Automated Identification System (AIS)
3:30 PM	Charlot Shaw	To Err Like Human: Improving Beginner Interactions in Clojure

Other Friday Events

- **Mini Career Fair:** 2:00 pm – 5:00 pm, Science 3119 Lounge
- **Robotics Contest:** 4:00 pm – 6:00 pm, Science 2122 Science Auditorium sponsored by the **Digi-Key Corporation**
- **Programming Contest:** 6:30 pm – 9:30 pm, Science 2122 Auditorium



Science Benedictine Commons Poster Session		
Poster 1	Jennifer Vang	WIMP vs. post-WIMP GUIs in Virtual Reality
Poster 2	Sergei Bezroukov and Tanner Paulson	Automatic Cats Feeder
Poster 3	Patrick Balfanz and Chris Johnson	Mannequino
Poster 4	Abby Panfil	How Stressors Affect Hard Drive Performance
Poster 5	Nicholas Joslyn, Kelby Kies, Manoj Rai and Derek Lyons	Advancing Medication Development by Combining Collaborative Crowdsourcing and Bioinformatics
Poster 6	Luciano Ricotta, Logan Kubovec, Emily Prince and Danial Neebel	The Black Hole Project
Poster 7	Derek Lyons, Heidi Berger, Mark Brodie and Clint Meyer	Bridge to STEM Success Program
Poster 8	Malvern Madondo	Learning and Modeling Chaos Using LSTM Recurrent Neural Networks.
Poster 9	Gord Boyer and John Bate	Crowdmark collaborative exam marking
Poster 10	Greta Jenkins	Effects of Prompt Explicitness in a Voice Interface

Career Fair Participants



Digi-Key Corporation is one of the fastest growing distributors of electronic components in the world. Since its founding in 1972, Digi-Key has been committed to offering the broadest selection of in-stock electronic components, as well as providing the best service possible to its customers, aiding engineers through the entire design process, from Prototype to Production*. This has led the company to be highly ranked year after year in industry surveys, in North America as well as Europe and Asia, in categories covering such facets of business as availability of product, speed of service, responsiveness to problems, and more. Digi-Key's website is the top-rated and most-visited website in the electronic distribution industry. For more information, please visit www.digikey.com.



The College of
St. Scholastica

St. Scholastica's online [Master of Science in Project Management](#) program builds on our experience in leadership, change management and technology. A master's degree in Project Management offers a deeper, richer curriculum than other project management certificates available. Our program also focuses on the knowledge and skills required to be an effective leader with an emphasis in leading global and distributed teams. A major component of a project manager's role in any industry is to provide guidance and leadership for a given project. In an increasingly global work environment, an international perspective and an understanding of how to handle distributed teams are critical skills.

Science 1106**Theme: UX****Session Chair: J. Philip East**

8:45 AM	J. Philip East and Andrew Berns	Creating an SOA for Introductory Programming Courses
9:15 AM	Ananda Poudel and Omar Al-Azzam	Interior Design with Augmented Reality
9:45 AM	Curt Hill	Visualizing Live Data Structures

Science 1109**Theme: Curriculum****Session Chair: Kristopher Glesener**

8:45 AM	Donald Heier	Re-designing a computer science program for tomorrow's leaders
9:15 AM	Peter Peterson, Jon Beaulieu, Mazin Jindeel, Aleksandar Straumann and Brandon Paulsen	Do This and Nothing More: Teaching Adversarial Thinking Without Security
9:45 AM	Shaun Lynch	Streamlining Workstation Deployment and Configuration in an Academic Computing Environment

Science 1111**Theme: Machine Learning & Time Series****Session Chair: Andrew A. Anda**

8:45 AM	Devin Timaul, Aleksandr Lukanen and Brandon Ly	Applying Deep Learning to Better Predict Cryptocurrency Trends
9:15 AM	Israt Jahan and Sayeed Sajal	Stock Price Prediction Using Supervised Machine Learning Algorithm
9:45 AM	Mostofa Ahsan, Rahul Gomes and Anne Denton	Fusion of SMOTE and outlier detection techniques for land-cover classification using Support Vector Machines

Science 1128**Theme: Applications****Session Chair: Dan Neebel**

8:45 AM	Leonid Scott	The Application of Evolutionary Computation in the Design of Wing Shapes
9:15 AM	Zachery Crandall and Paul Hinker	Open-source, Extensible Software for Advanced Spectroscopic Analysis
9:45 AM	Andrew Erickson, Dennis Guster, Leena Radeke and Erich Rice	Understanding Quantum Information Systems: Take Your Cue from the Qubit

Science 1106**Theme: Renewable Resources****Session Chair: Curt Hill**

10:30	Jay Chaudhari, Sujan Shrestha, Igor Ceridorio and John Hastings	Water Conservation through Educational Application
11:00	Ryan Policheri and Aaron Smith	Mechanical Mass-Energy Storage Systems: Making Green, Renewable Energy Work
11:30	Abenezer Monjor, Yujing Song and Khondoker Prio	Power Monitoring and Prediction Software

Science 1109**Theme: Educational Games****Session Chair: Karen Arlien**

10:30	Mark Meysenburg	Charles Babbage, Ada Lovelace, and the Dawn of Computing
11:00	Mark Brodie	Play SQL - Learning Database Querying using a Game
11:30	Adrian Abundez-Arce and Chris Johnson	Sensorflow: Learning Language Through Motion

Science 1111**Theme: Web****Session Chair: Jennifer Rosato**

10:30	Randy Campbell, Alex Boettger and Jared Martin	Universal AJAX Interface Generation
11:00	Mitchell Petit and Yi Liu	A Comparison of Technologies for Developing Web-Based Online Multiplayer Games
11:30	Shin-Ping Tucker	A Success Model of E-commerce Systems

Science 1128**Theme: Curriculum****Session Chair: Scott Kerlin**

10:30	Jeremy Straub	Curriculum Development for a World Class Cybersecurity Program
11:00	Scott Kerlin	Scaling Up to Scale Down
11:30	Malvern Madondo, Daniela Moreno Gomez and Nicole Ciernia	Hitchhiker's Guide to Computer Science for Social Good

Science 3106**Theme: Faculty Birds-of-a-Feather**

10:30 – 12:00	Mark Fienup	Faculty Birds-of-a-Feather: Pedagogy, CS Department Issues, Future of MICS
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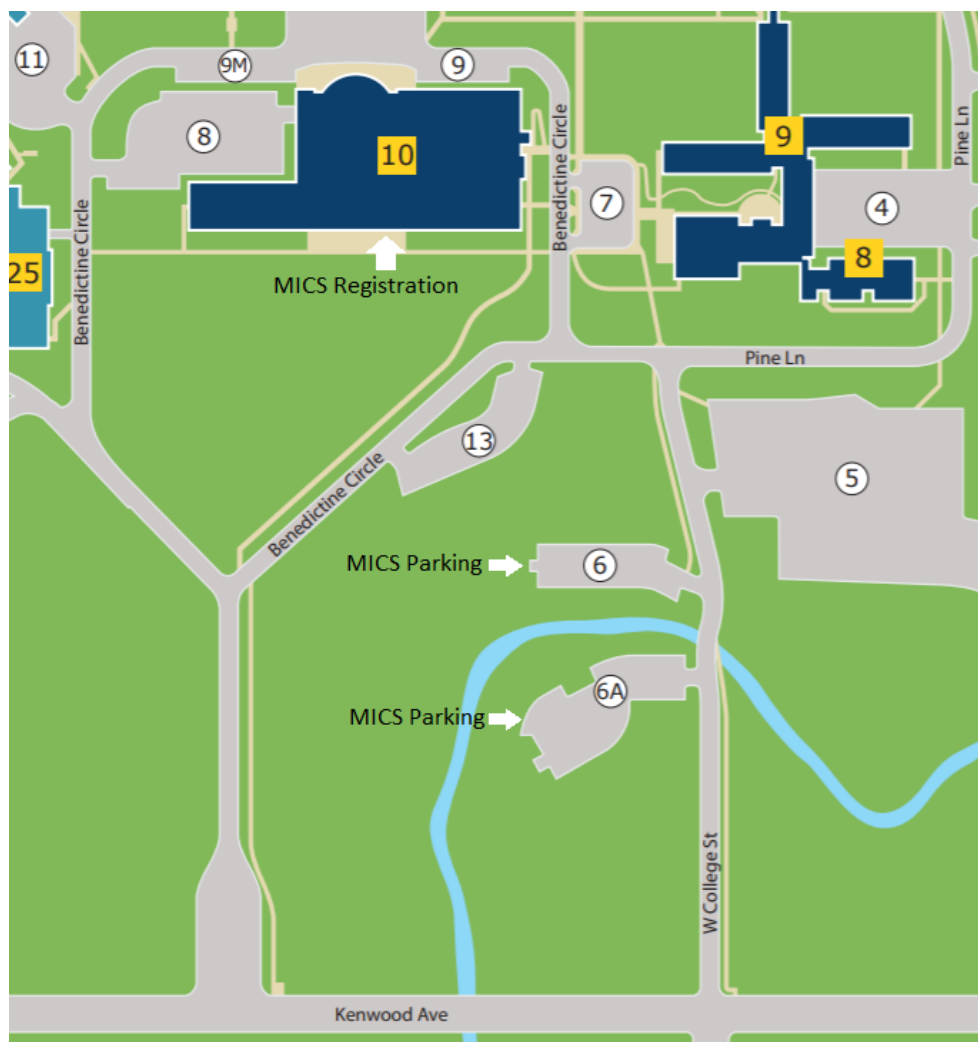
Other Saturday Events

- **Awards and Keynote Speech by Dr. Maria Gini:** 12:00 pm – 1:00 pm, Science Benedictine Commons
- **Box lunches:** 1:00 pm, Science Benedictine Commons

Map, Parking, and Directions

All events will be in the Science Center, building 10 on the map.

Parking: upon entering W College Street, please use the first two lots on your left, 6A & 6.



Acknowledgments

The Organizing Committee for MICS 2018 thanks our keynote speaker, Dr. Maria Gini, and our faculty and student presenters and other attendees. We also thank our student volunteers, and the staff of The College of St. Scholastica which supported us in so many ways. We would also like to thank our Career Fair participant, Digi-Key Corporation for their generous sponsorship of the robotics and programming contests.