

## Welcome to the 2<sup>nd</sup> CADSCOM

CADSCOM 2019: Colloquium on Analytics, Data Science and Computing

Message by Dr. Firasat Khan, Twin Cities ACM Chapter and CADSCOM Chair



Welcome to the 2nd Annual Colloquium on Analytics, Data Science and Computing. CADSCOM is a homegrown venue for scholarship, industry-academic engagement and foremost an opportunity for talent development.

Brian Cantwell Smith, in his book *Promise of Artificial Intelligence*, follows the evolution of AI from targeted competence in narrow domains, to widely applicable deep learning models, to a potentially revolutionary level of AI with general intelligence akin to humans. The promise is indeed great in every respect, and in fact stands to be the engine for what the founder of the World Economic Forum, Klaus Schwab calls the emerging *Fourth Industrial Revolution*. In his book of the same name he posits, the coming "changes are so profound that, from the perspective of human history, there has never been a time of greater promise or potential peril." He cautioned "decision-makers are too often caught in traditional, linear (and non-disruptive) thinking or too absorbed by immediate concerns to think strategically about the forces of disruption and innovation shaping our future."

We have a rich program in store for you, opening with our keynote exploring the potential of quantum computing-enabled AI solutions, followed by a deep discussion on AI ethics. We have over two dozen original research presentations for you to choose from, ending with an engaging Career Readiness Panel.

While immersed in our program which is sure to be cognitively fulfilling, we also hope you are able to engage with our panelists and presenters as we all recognize the cognitive dissonance of recognizing AI as both immensely useful and potentially perilous at the same time. Thank you for making CADSCOM a success with your participation.

### The CADSCOM Planning Council

Dr. Firasat Khan, Chair, Metropolitan State University  
Dr. Hamdan Alabsi, Bemidji State University (Session Chair)  
Dr. Omar Al-Azzam, St. Cloud State University  
Dr. Rajeev Bukralia, Minnesota State University, Mankato (Industry Lead)  
Mr. Devansh Garg, Metropolitan State University (Session Chair)  
Dr. Ismail Bile Hassan, Metropolitan State University (Session Chair)  
Dr. David Jacobson, Metropolitan State University (Session Chair)  
Dr. Simon Jin, Metropolitan State University (Program Committee Chair, Session Chair)  
Dr. Sang Phil Kim, Winona State University (Session Chair)  
Professor Jack Pope, North Hennepin Community College  
Professor Prabesh Shrestha, St. Cloud Technical and Community College  
Dr. Dalia Suleiman, Metropolitan State University (Career Panel Co-Chair, Keynote Co-Lead)  
Dr. Halbana Tarmizi, Bemidji State University (Career Panel Co-Chair, Session Chair)  
Prof. Boern Vang, Metropolitan State University (MAC Club Co-Advisor)  
Dr. Wei Wei, Metropolitan State University (Program Committee, Session Chair)

### ACM Minneapolis Professional Chapter

Dr. Firasat Khan, Chair, Metropolitan State University  
Dr. Rajeev Bukralia, Vice Chair, Minnesota State University, Mankato  
Dr. Simon Jin, Secretary, Metropolitan State University  
Dr. Yohannes Tadesse, Treasurer, Metropolitan State University

### Supporting Clubs



Data Resources for Eager & Analytical Minds



### What's next?

## 2<sup>nd</sup> Annual CIACAM

Colloquium on Information Assurance,  
Cybersecurity, and Management  
Saturday, June 13, 2020

## 3<sup>rd</sup> Annual CADSCOM

Saturday, October 24, 2020

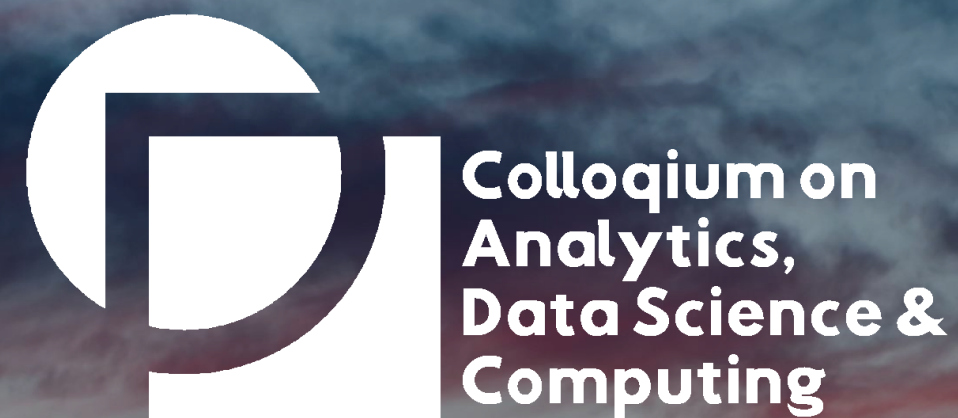
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October 26, 2019

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## Artificial Intelligence Ethics Panel 10:00 AM

### Creepy Algorithms: Risks and Solutions

Stephen Hawking once said, "The rise of powerful AI will be either the best or the worst thing ever to happen to humanity. We do not know which." One of the greatest dangers of AI is the development and implementation of algorithms that can exacerbate racial or gender discrimination and privacy violations. This panel will shed light on the ethical, social, and legal implications of algorithms and artificial intelligence and will discuss potential solutions for mitigating such risks.



#### Dr. Rajeev Bukralia (Moderator)

Dr. Rajeev Bukralia is an associate professor in the Computer Information Science Department at Minnesota State University, Mankato. He serves as the Vice Chair of the Twin Cities Chapter of the Association for Computing Machinery (ACM) and founding faculty advisor to DREAM, a student organization of over 300 students focused on data science and AI. His teaching and research interests include data science, machine learning, IT strategies, and AI ethics. He works closely with industry, including Fortune 500 companies, on data science initiatives and partnerships.



#### Dan Atkins (Panelist)

Dan Atkins is a classically trained capitalist that is culturally a Startup working for a Fortune #5. A VP of community engagement and a analytics evangelist at Optum, he is also an Executive-in-Residence for MinneAnalytics where he is a Cofounder and Executive Director. MinneAnalytics is a 501c6 nonprofit dedicated to serving the data science and analytics community by providing accessible, authentic and engaging events focused on the sharing of knowledge.



#### Isaac Cheifetz (Panelist)

Isaac Cheifetz has over twenty years of experience helping companies hire senior executives who have demonstrated their ability to leverage technology to build profitable businesses. Isaac has strong change agent skills, as well as depth of understanding at the intersection of data management, business intelligence, process optimization and the growth of IT as an engineering discipline. He writes a bi-weekly column in the Star Tribune on the changes advanced technologies are affecting in business and society.



#### Kate Bischoff (Panelist)

Kate Bischoff is an overly enthusiastic, sarcastic, and opinionated management-side employment attorney and SHRM-SCP-certified HR pro. She works closely with management and HR folk to improve organizations and make it easier to recruit and retain talent through having easy-to-understand policies, easy-to-use technology, and easy-to-explain compliance initiatives. Kate has been recognized by The New York Times, CNN.com, Wall Street Journal, USA Today, National Public Radio, and other journalistic sources as a leading authority on harassment, technology in the workplace, and employment law.

# Colloquium on Analytics, Data Science & Computing CADSCOM 2019

## ACM Keynote – Dr. Chuck Easttom 9:00 AM

### Quantum Computing and Artificial Intelligence



The current state of the field will be explored. This includes discussion of current research in implementing machine learning in quantum environments. Then the potential impact for quantum computing on synthetic consciousness will be explored. This will explore a range of topics including the ramification of Penrose's ORCH-OR theory in a quantum computing environment. Finally, current advances in quantum information theory will be discussed.

**Dr. Chuck Easttom** is the author of 27 books, including several on computer security, forensics, and cryptography. He has also authored scientific papers on digital forensics, cyber warfare, cryptography, and applied mathematics. He is an inventor with 16 computer science patents. He holds a Doctor of Science in cyber security (dissertation topic: a study of lattice-based algorithms for post quantum cryptography) and three master's degrees (one in applied computer science, one in education, and one in systems engineering). He is currently working on a second doctorate with an emphasis in nanotechnology and bioengineering (dissertation topic: The Effects of Nonlinear Dynamics on Nanotechnology and Bioengineering). He is a Senior Member of the IEEE and a Senior Member of the ACM as well as a member of IACR (International Association of Cryptological Research) and INCOSE (International Council on Systems Engineering). He is also a Distinguished Speaker of the ACM (Association of Computing Machinery), and a frequent speaker at conferences. He is a reviewer for six scientific journals and the Editor in Chief for the American Journal of Science and Engineering. You can learn more at [www.ChuckEasttom.com](http://www.ChuckEasttom.com)

## Career Readiness Panel 3:30 PM

Preparing graduates who are ready to meet the demand in the industry is one of the most important aspects of higher education. Panelists will discuss what could be done to improve the readiness of college graduates to make their career in the field of Data Science. We will hear various perspectives of career readiness including those from the industry, academia, as well as a recent graduate.

#### Panelists:

<b>Dr. Wei Wei</b>	Associate Professor of Mathematics and Statistics, Metropolitan State University
<b>Dr. Ismail Bile Hassan</b>	Assistant Professor of Computer Science and Cybersecurity, Metropolitan State University)
<b>Dan Atkins</b>	VP of Community Engagement, Analytics Evangelist Optum
<b>Umanga Poudel</b>	Quality Engineer at Boston Scientific, Recent MSU– Mankato Graduate

#### Moderators:

<b>Dr. Halbana Tarmizi</b>	(Associate Professor of Business Administration at Bemidji State University)
<b>Dr. Dalia Sulieman</b>	(Assistant Professor of Computer Science and Cybersecurity at Metropolitan State University)

## Saturday, 10/26, 8:00 AM – 4:45 PM

<b>8:00 - 8:45</b>	<b>1st floor Training Center (TC):</b> Check-in, Breakfast, Networking
<b>8:45 - 9:00</b>	Welcome by Minnesota State Univesity Mankato, and Metropolitan State University Welcome by Twin Cities ACM with Introduction
<b>9:00 - 9:50</b>	<b>ACM Keynote: Dr. Chuck Easttom on <i>Quantum Computing and Artificial Intelligence</i></b>
<b>10:00 - 10:50</b>	<b>TC: <i>Artificial Intelligence Ethics Panel</i></b>
<b>11:00 - 11:25</b>	<b>TC: <i>Public datasets for the data science and statistics classroom</i></b> (David Jacobson) <b>105: <i>Impact of fraud on consumer buying habits</i></b> (Susan Shanks, David Mwangi, Robert Bentz, Holly Halverson) <b>107: <i>A smart cities framework: addressing requirements, challenges and risks</i></b> (Olufemi Fajolu and Ellen Kirchman) <b>512: <i>Ethical and privacy implications of data analytics in retail</i></b> (Rejoice Okoro and Rajeev Bukralia) <b>531: <i>Visual analytics for library collection management</i></b> (Luwis Andradige Ravindu Rasadun Andradi, Rajeev Bukralia, Nat Gustafson-Sundell, Evan Rusch, Pat Lienemann)
<b>11:30 - 11:55</b>	<b>TC: <i>Predictive analytics for retention in higher education: a systematic review</i></b> (Robert Strand, Brian Dorr, Jason Cussler) <b>105: <i>A systematic review of the regulations of data privacy and protection</i></b> (Gabrielle Grommesch, Tara Rasch, Shannon Feuerhelm) <b>107: <i>Consumer data sharing: monetization mechanisms, risks and legal implications</i></b> (Kaying Vang, Aliou Swaray, Abubaccr Simaha) <b>512: <i>Improving performance and usability in modern Chatbot platforms</i></b> (Aaron Lawrence, Dalia Sulieman) <b>531: <i>Data and the brain: how knowledge of human perception drives effective visual design</i></b> (Shawn Waller, Txuci Lee, Paul Deonarine)
<b>12:00 - 1:00</b>	<b>1st floor Training Center: Lunch/Networking</b>
<b>1:00 - 1:25</b>	<b>107: <i>Applications and limitations of blockchain in inventory management</i></b> (William Blanzeisky, Rajeev Bukralia) <b>512: <i>Fall detection and prevention using smartphones: an overview</i></b> (Rakesh Reddy Akkati, Naseef Mansoor) <b>515: <i>Predictive load balancing of processing queues using fluctuating historical provider claims data</i></b> (Christopher Bradshaw, Michael Hart) <b>531: <i>Applications &amp; challenges of IoT in traffic management</i></b> (Shivani Gautam, Rajeev Bukralia)
<b>1:30 - 1:55</b>	<b>512: <i>Evil twin attack - why you shouldn't connect to free public wi-fi</i></b> (Sai Swaroop Valligetta, Christopher Veltsos) <b>515: <i>Predicting fashion trends using Twitter analytics</i></b> (Tania Hasanpoor, Anahita Bahrami, Rajeev Bukralia) <b>531: <i>AI algorithmic bias in consumer banking</i></b> (Avinash Pulchan, Sandra Weston, Michelle Ujene)
<b>2:00 - 2:25</b>	<b>512: <i>Trends and challenges in fall detection: a survey</i></b> (Asif Basha Mohammad, Naseef Mansoor) <b>515: <i>Recognizing facial characteristics using deep learning</i></b> (Taisuke Usumi, Rajeev Bukralia) <b>531: <i>Ensuring verifiability into big data algorithms to advance public trust and Accountability</i></b> (Yoon Han, Firasat Khan)
<b>2:30 - 2:55</b>	<b>512: <i>Analyzing caregivers' mHealth mobile application reviews using Health IT usability evaluation model [Health-ITUEM]</i></b> (Suboh Alkushayni) <b>515: <i>Vision is better than intervention: discussion and challenges for vision-based fall detection systems</i></b> (Ilma Sheriff, Naseef Mansoor) <b>531: <i>Modelling water pollution using extreme value analysis</i></b> (John Burke, Jiameng Zhou)
<b>3:00 - 3:25</b>	<b>512: <i>A Node.js prototype for resolving runtime errors during automated software testing</i></b> (Grace Varghese, Michael Hart) <b>515: <i>Using artificial intelligence to find the optimal solution to a gear puzzle</i></b> (Suboh Alkushayni) <b>531: <i>AutoML: Automating the traditional machine learning methodology</i></b> (Abdul Wahab Mohammad, Rajeev Bukralia)
<b>3:30 - 4:25</b>	<b>1st floor Training Center: <i>Career Readiness Panel</i></b>
<b>4:30</b>	<b>TC: Closing message and Door Prizes donated by CADSCOM organizers! Be present to win.</b>