17th International Conference on

Naturalistic Decision Making

JULY 1 – 5, 2024

Auckland University of Technology
Auckland Tāmaki Makaurau, Aotearoa
New Zealand Auckland, New Zealand

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KEYNOTE SPEAKERS

BRETT HALL

Brett is a science communicator with over 20 years experience in science education. He hosts his own podcast, *TokCast,* and co-hosts another podcast with his associate, Naval Ravikant, where they explore ways to remedy the stalling of progress in fundamental physics.
https://www.bretthall.org/

KARL BRIDGES

Karl is a Science & Technology Lead for the Human Sciences Programme in the Information Warfare Division of the Defence Science & Technology New Zealand Defence Force. Karl brings a scientific eye to safety, efficiency, and innovation by applying human factors, including current research on human behaviour, cognition, and physiology.
https://www.linkedin.com/in/karlbridges/

TIM MILLER

Tim is a professor of human-centred artificial intelligence at the University of Queensland, Australia. His primary area of expertise is in artificial intelligence, with particular emphasis on human-AI interaction, AI planning, and explainable AI. His work is at the intersection of artificial intelligence, interaction design, and cognitive science/psychology.
https://people.eng.unimelb.edu.au/tmiller/

SHENGHUA LUAN

Shenghua Luan is the principal investigator of the Risk And Uncertainty Management (RAUM) lab at the Institute of Psychology, Chinese Academy of Sciences (CAS). Shenghua is a cognitive psychologist who has a wide range of interests in judgment and decision-making research.
http://english.psych.cas.cn/

MARTA SINCLAIR

Marta is Senior Lecturer in management at Griffith University, Australia. With over 20 years of management experience across various industries, including Silicon Valley, she's known for her research and publications, notably the Handbook of Intuition Research. Dr. Sinclair is also the founder of "Intuition in Organizations," a global community of intuition researchers.
https://experts.griffith.edu.au/8800-marta-sinclair

AGENDA

WZ Building 5067706, WZ Building,
Auckland 1010, New Zealand

Note: All times are in NZST (UTC +12)

MONDAY, JULY 1, 2024

0900 – 1700   **Exploring NDM with the Experts**.......WZ502

TUESDAY, JULY 2, 2024

0900 – 1700   **Workshop** WZ502
CTA Institute
(Catered)

WEDNESDAY, JULY 3, 2024

0900 – 1000 **Welcome & State of the NDMA**............. WZ416
William Wong and Brian Moon

1000 – 1100 **Keynote | Brett Hall**................................. WZ416
Presentation

1115 – 1200 **Keynote | Karl Bridges**.............................WZ416
Presentation

1200 – 1300 **Papers | Special Selections**...................... WZ416

Presentation

Diagnostic Expertise in the Emergency Department
Gary Klein[1], Emily Newsome[1], Kari Hoy[1], Eric Eisenberg[2], Shawna Perry[3,4], Patience Osei[4], Susan Peterson[4], Ayse P. Gurses[4]
[1]ShadowBox Training, LLC
[2]College of Arts and Sciences, University of South Florida
[3]University of Florida Health Science Center
[4]Johns Hopkins University School of Medicine
Submitted to JCEDM for Special Issue

Presentation

Fending Off Reification by Introducing an Invisible Feature to NDM Explanations
Brian Moon, Perigean Technologies LLC
Submitted to JCEDM for Special Issue

1400 – 1530   <u>**Papers | Sport**</u>.. WZ416

<u>Presentation</u>   <u>The Role of Emotions in Intuitive Decision-Making: a Study Conducted with Expert Handball Coaches</u>
Tanguy Fontaine[1], Oriane Petiot[1], Gilles Kermarrec[1]
[1]Center for Research on Education, University of Western Brittany

<u>Presentation</u>   <u>High performance coach cognition in the wild: using applied cognitive task analysis for practical insights–cognitive challenges and curriculum knowledge</u>
Jamie Taylor[1,2,3], Michael Ashford[3,4] and Matt Jefferson[5]
[1]School of Health and Human Performance, Dublin City University
[2]Insight SFI Centre for Data Analytics, Dublin City University
[3]Grey Matters Performance Ltd.
[4]Moray House School of Education and Sport, The University of Edinburgh
[5]British Triathlon Federation

<u>Presentation</u>   The Mental Game: Superstitious Behaviors, Rituals, and Habits as a Mechanism of Mental Control in Elite Athletes
Alex van der Merwe[1] and Shane T. Mueller[2]
[1]Salesforce, Inc.
[2]Department of Cognitive and Learning Sciences, Michigan Technological University
Submitted to JCEDM for Special Issue

Interactive Experiences........................ WZ502

<u>Online Tactical Decision Game (SBXs)</u>
John Schmitt, ShadowBox LLC

<u>The Plot Thinkens: Blending roles and bending rules to scale and increase the fun</u>
Annie Wayne, DVM[1], Alexandra Pivoda, BVMS[1], Brian Moon[2], Jayden Moon[3]
[1]Ethos Veterinary Health
[2]Perigean Technologies
[3]College of William and Mary

1600 – 1700 **Papers | Healthcare** WZ416

Presentation **Understanding the Complexity of the Decision Process for Doctors in the Treatment of Cancer**
Nishtha Jain[1] and Purnima Singh[1]
[1]Department of Humanities and Social Sciences, Indian Institute of Technology
Submitted to JCEDM for Special Issue

Presentation **Rapid reskilling using Goal-organized simulation exercises; an example from healthcare**
Lia A. DiBello[1] and David M. Lehmann[1]
[1]ACSI Labs Inc.

1700 – 1830 **Panel** WZ416

Presentation **Understanding Patient Work through a Naturalistic Decision Making Lens**
Elizabeth Lerner Papautsky[1], Laura Militello[2], Barbara Voigtman[3], Megan E. Salwei[4]
[1]University of Illinois Chicago
[2]Applied Decision Science
[3]Patient advocate
[4]Vanderbilt University Medical Center

1845 – 2000 **Posters, with Wine & Cheese** WZ100C

Paper **Naturalistic Decision Making & How Expert Security Professionals Identify Security Concerns**
Andrew Wilson[1]
[1]University of Guadalajara, Centro Universitario de Ciencias Exactas e Ingenierías (CUCEI)

Paper **Strengthening a Veterinary Mentoring Program with NDM-Inspired Tools and Perspective**
Annie Wayne[1], Alexandra Pivoda[1], Brian Moon[2], Jayden Moon[3], Cara Menges[2] and Megan Leavens[2]
[1]Ethos Veterinary Health
[2]Perigean Technologies
[3]College of William and Mary

Paper   **Accelerating Learning in an Ill-Defined Military Setting with a technology that scales knowledge transfer**
Lia Dibello[1], Dee Andrews[2]
[1]ASCI Labs
[2]Independent Consultant

Paper   **An Ecological Perspective on Expertise**
Gavan Lintern, Monash University

Paper   **Lifting the Veil on Intuition**
Robert R. Hoffman

The Tough Sell of Resilience Engineering
Stephen L. Dorton, Glenn J. Lematta, & Kelly J. Neville, The MITRE Corporation

Mixed Reality Training for Psychomotor Skills
Laura G. Militello, John Hendricks, Oliver Smith, and Steve Wolf

THURSDAY, JULY 4, 2024

Highlighted sessions will be available to virtual attendees

0830 – 0930 **Keynote | Tim Miller** WZ416
Presentation

0930 – 1015 **Keynote | Marta Sinclair** WZ416
Presentation

1030 – 1200 **Papers | NDM Models & Methods** WZ416

Presentation **Cognitive Complexity Tool: An Instrument for Identifying Cognitive Challenges in Healthcare Work**
Kari Hoy[1], Emily Newsome[1], Emilie Roth[2], Gary Klein[1], C. Matthew Stewart[3], Ayse P. Gurses[3]
[1]ShadowBox Training, LLC
[2]Roth Cognitive Engineering
[3]Johns Hopkins University School of Medicine

Presentation **What can Models and Mantras tell us about designing visualizations for different domain environments and contexts?**
April Tieu[1] and Neelam Naikar[1]
[1]Defence Science and Technology Group
Submitted to JCEDM for Special Issue

Presentation **Cognitive Task Analysis Using Clean Questions**
Sharon Small[1] and Pamela Ey[2]
[1]Clean Language Institute, OR, USA
[2]Queens University of Charlotte

1030 – 1200 **Panel**.. WZ502

Presentation **Simulation-Based Training Panel**
Chair: Laura Militello, Applied Decision Science
Panelists:
Erin Carn-Bennett, Starship Health
Khang Hee Gan, Starship Children's Hospital
Maritza Plaza-Verduin, UF Health Shands Children's Hospital
and University of Florida College of Medicine
Brendan McBreen, Faculty, Marine Corps Intelligence School
Joseph Borders, ShadowBox, LLC
Geir Nes, Solid Ground and Trygg-Grunn

1300 - 1430 **Papers | Defense & Security** WZ416

Presentation **Security Technology Adoption Decision Making: A
Critical Decision Method Inquiry**
Billie Dale[1], David Gamblin[1], Julie Gore[1]
[1]Birkbeck, University of London

Presentation **Decision-Making Process behind Believing
Misinformation**
Boshra Talebi Haghighi[1] and B.L. William Wong[1]
[1]Auckland University of Technology

Presentation **Decision Superiority: The View of Naturalistic Decision
Making**
*Robert Hoffman, Florida Institute for Human & Machine
Cognition*

1300 – 1430 **Interactive Experiences**............................ WZ502

Online Tactical Decision Game (TDGs)
John Schmitt, ShadowBox LLC

Increasing Explainability with the Artificial Intelligence Quotient: Tools for Stakeholders
Joseph Borders[1], Gary Klein[1,2], Shane Mueller[3] and Robert Hoffman[4]
[1]ShadowBox LLC
[2]MacroCognition LLC
[3]Michigan Technological University
[4]Florida Institute for Human & Machine Cognition

Cognitive Task Analysis Using Clean Questions – Interactive Experience
Sharon Small[1], James Ramirez[2] and Pam Ey[3]
[1]Clean Language Institute
[2]JAR Consulting
[3]Queens University of Charlotte

1500 - 1630 **Papers | AI & CSE** WZ416

Presentation **Informing AI Use in Science: A Cognitive Task Analysis Approach**
Jessica Irons[1], Patrick Cooper[1], Melanie McGrath[1] and Andreas Duenser[1]
[1]Commonwealth Scientific & Industrial Research Organisation (CSIRO)
Submitted to JCEDM for Special Issue

Presentation **What's informing Trust and Adoption? Can current Cognitive Models support expert adoption of AI?**
Shaun C Lamb[1], Maire Byrne[2], Timothy J. Norman[1], Sarvapali D. Ramchurn[1] and Mohammad Neish[3]
[1]University of Southampton
[2]Defence Science and Technology Laboratory
[3]University of Bournemouth
Submitted to JCEDM for Special Issue

FRIDAY, JULY 5, 2024

Highlighted sessions will be available to virtual attendees

0900 – 1000   **Keynote | Shenghua Luan**..................... WZ416
Presentation

1030 – 1200   **Papers | Special Selections** WZ416

Crystallising cognitive diamonds in a sugar factory – How cognitive task analysis (CTA) improved learning from a serious accident by understanding what went right
Ian Pemberton[1] and Dominic Mooney[2]
[1]Chartered Ergonomist, Human Focus International, Ltd.
[2]Head of Health and Safety, British Sugar
Submitted to JCEDM for Special Issue

Presentation

Dynamic Duos: Cue Appraisal Consensus among Team Members Unlocks the Benefits of Shared Mental Models
Ben W. Morrison[1], Hoang Anh Mai[1], Lilian Wu[1], Nina Krishnaswamy[1], Natalie M. V. Morrison[2] and Mark Wiggins[1]
[1]Macquarie University, Sydney, Australia
[1]Western Sydney University, Sydney, Australia
Submitted to JCEDM for Special Issue

Interactive Experiences........................... WZ502

Where the Rubber Meets the Road: Strategies and Techniques for Applying Decision-Centered Design
Katie Ernst[1] and Laura Militello[1]
[1]Applied Decision Science

1030 – 1200 **Panel**... WZ503

Presentation

Naturalistic Decision Making and Sport
Emily Newsome, ShadowBox LLC

Panelists:
Riki Tahere, Canterbury Rugby Union, The Global Draft
Pam Richards, University of Central Lancashire
Peter Fadde, gameSense Sports, Southern Illinois University
Jamie Taylor, Grey Matters Performance Ltd.
Tanguy Fontaine, Center for Research on Education, University of Western Brittany

1300 – 1430 **Papers | Operations** WZ416

Presentation

Assessing Variability in Nuclear Regulatory Decision Making
Erica M. Barhorst-Cates[1], Tony Ciavarelli[1] and John Hanna[2]
[1]Monterey Technologies, Inc.
[2]United States Nuclear Regulatory Commission
Submitted to JCEDM for Special Issue

Presentation

Defining Safety in Distributed Work Systems: An Exploration of Routine Safety Actions
Yan Xiao[1], Richard A. Young[2], Ayse P. Gurses[3] and Kimberly G. Fulda[4], for the PROMIS Team[5]
[1]University of Texas at Arlington
[2]JPS Health Network
[3]Johns Hopkins University
[4]University of North Texas Health Science Center
[5]Partnership for Resilience in Medication Safety Team

Presentation

Navigating an Autonomous Driving Paradox: Enhanced Perceptions of Situation Awareness, Delayed Hazard Anticipation
Angela Hoang[1], Ben W. Morrison[1], Arasi Pudasaini[1], Tyler-Ann Wheeler[1], Mark Wiggins[1], Brett Molesworth[2], Jaime Auton[3] and Daniel Sturman[3]
[1]Macquarie University, Sydney, Australia
[2]University of New South Wales, Sydney, Australia
[3]University of Adelaide, Adelaide, Australia

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1300 – 1430   **Presentations**...WZ502

Supporting Cognition in Extreme Environments
Chair: *Joseph Borders, ShadowBox LLC*
Cochair: *Laura Militello, Applied Decision Science*

Speakers:
*Shawna Perry, University of Florida Health Science
Center; Armstrong Institute for Patient Safety and
Quality at Johns Hopkins Medicine
Adele Luta, Eleda International Ltd.
Simon Gill, The Safeguarding Community
David Malek, U.S. Air Force Research Laboratory*

1500 - 1630   **Panel**... WZ416

<u>Presentation</u>   **AI: Tool or Teammate? And Other Design Dilemmas
in Naturalistic Settings**
Chairs:
Neelam Naikar, Defence Science and Technology Group

Panelists:
*Emilie Roth, Roth Cognitive Engineering
Robert Hoffman, Institute for Human & Machine
Cognition
Gary Klein, MacroCognition, LLC
Laura Militello, Applied Decision Science
Cindy Dominguez, The MITRE Corporation*

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