IEEE SMC Montreal Chapter
Distinguished Lecture of Dr. Ming Hou on Human–AI Symbiotic Partnership

Dr. Ming Hou, a Fellow of the Canadian Academy of Engineering, Fellow of IEEE, and Principal Scientist from Defence Research and Development Canada (DRDC) recently visited the IEEE Systems, Man, and Cybernetics (SMC) Society Montreal Chapter. During his visit, Dr. Hou delivered a Distinguished Lecture entitled "*Interaction-Centered Design for Responsible Human-AI Symbiotic Partnership: The Next Stage of Evolution.*" The lecture took place on May 27th, 2025, at Concordia University, Montreal, Canada, and attracted enthusiastic engagements with faculty and graduate attendees.

Drawing on over 20+ years of research wisdom and experience, Dr. Hou shared the insights from his work at DRDC, which is an institution with a century-long legacy of innovation and remarkable societal impacts on humanity. He explained the research focuses on human cognition, perception modeling, human performance and training under extreme environmental conditions, and human interactions with emerging technologies such as AI and digital reality systems. This includes integrating AI into high-stakes domains such as defence, healthcare, and transportation. His lecture, particularly, focused on enabling responsible human–AI teaming through interdisciplinary approach of Interaction-Centered Design (ICD), addressing insufficient human-centered design processes and how emerging AI technologies as teammates can be designed to augment rather than undermine human capabilities.

Dr. Ming stressed how modeling the human mind and behavior is critical to designing AI systems that are not just efficient, but also trustworthy and aligned with human needs. Placing this discussion within a broader historical and technological context, Dr. Ming reflected on the trajectory and transformational nature of the four industrial revolutions, from steam engines and electrification to the internet and now the cyber-physical-biological fusion. The current era, marked by quantum computing, synthetic biology, and ubiquitous connectivity, is not just transforming productivity but also reshaping human identity, relationships, and ethical boundaries. Using personal anecdotes, including stories from his childhood in China and the fascination with science fiction, Dr. Hou illustrated how fantastical ideas, such as talking face-to-face through mobile phones, have quickly become realities with the rapid technological evolution and revolutions. These reflections serve as a reminder that the gap between imagination and implementation is shrinking rapidly. Consequently, the urgency to embed ethical, lawful, responsible, and human-aware principles into AI development has never been greater.

Through sharing his successful stories, Dr. Hou highlighted the course of translating creative ICD ideas for Intelligent Adaptive Systems (e.g., AI-enabled autonomous systems) into theoretical approaches, engineering implementation processes, innovative technological solutions, disruptive defence capabilities, industrial best practices, international standards, and government and the United Nations policies. He then concluded the lecture with a compelling call to action: to actively steer this AI technological revolution not only through innovation but also with foresight, empathy, accountability, and a deep commitment to ICD for a Collaborative and Trustworthy Human-AI Symbiotic Partnership.


Interaction-Centred Design for Reliable and Responsible Human-AI Symbiotic Partnership:
The Next Stage of Evolution
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Psychopath AI Showing Horrors of Human Bias
An MIT AI machine tested how specific data fed into an algorithm can impact "outlook". The machine, named Norman was fed with grisly images and went through Rorschach test to "calculate" his mental health with terrifying results when responding to images:
Standard AI Sees
Images
Norman Sees
An plane flying with smoke coming from it
Man is shot dumped from car
A black and white photo of a baseball glove
A person is holding an umbrella in the care
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