

IEEE SMC Xi'an Chapter Hosts Distinguished Lecture

Prof. Haibin Zhu Unveils “E-CARGO/RBC: Enabling Research Innovations in the Era of AI”

On 20 September, the IEEE Systems, Man, and Cybernetics (SMC) Xi'an/China Chapter welcomed Prof. Haibin Zhu from the Department of Computer Science & Mathematics, Nipissing University, Canada, to deliver a Distinguished Lecture entitled “E-CARGO/RBC: Enabling Research Innovations in the Era of AI” at Xidian University. More than 30 faculty members and graduate students attended the talk, which generated lively discussion throughout.

Prof. Zhu introduced his original E-CARGO/RBC framework—an acronym for Environments-Classes, Agents, Roles, Groups, Objects / Role-Based Collaboration—that places “role” at the center of system modeling. By decomposing complex socio-technical systems into computable and verifiable collaborative models, the approach unifies humans, machines, and physical entities within a single formalism, enabling automatic requirement specification, task allocation, and performance evaluation.

Reviewing recent applications, Prof. Zhu demonstrated how multi-objective evolutionary algorithms embedded in E-CARGO can converge to the Pareto frontier within million-solution search spaces. Case studies ranged from group role assignment (GRA) and service composition to cloud-resource scheduling and pandemic logistics, illustrating the model’s capacity to support real-time decision-making in areas such as emergency supply dispatch and industrial Internet-of-Things manufacturing. “E-CARGO is not just another modeling language,” he emphasized, “it is an extensible, verifiable collaborative theory for thought—take it, adapt it, criticize it, and innovate.”

In the interactive session after the report, the participants raised their questions one by one, and Professor Zhu responded one by one, sharing his contact information and published works, encouraging the graduate students present to “abstract the real problem into a computable problem from the first principle”. The lecture concluded with heartfelt applause. His visit laid the foundation for future collaborations and sparked participants' interest and enthusiasm for further exploration in these research fields.



