

**Summary Report – IEEE SMCS DLP - Hungary**  
**IEEE Systems, Man, and Cybernetics Society Distinguished Lecturer**

**Date:** 22 May 2025

**Talk:** Consensus and Formation Control for Multi-agent Systems (Time: 9:20-10:00, Venue: Conference Center, Politehnica University of Timișoara, Timișoara, Romania)

**Speaker:** Professor Peng Shi, IEEE Fellow, Adelaide University, Australia

**Organizer:** Professor Levente Kovács, Chair of IEEE SMCS Hungary Chapter

On May 22, 2025, Prof. Peng Shi from the University of Adelaide delivered a distinguished lecture titled “Consensus and Formation Control for Multi-Agent Systems.” The event was organized under the IEEE Systems, Man, and Cybernetics Society Distinguished Lecturer Program and aimed to strengthen the research engagement of our community in the field of advanced control and artificial intelligence. The lecture was part of the International Symposium on Applied Computational Intelligence and Informatics (SACI 2025) held in Timișoara, Romania.

In his talk, Prof. Shi provided an in-depth overview of the fundamental principles and recent advances in multi-agent systems, focusing on consensus algorithms, formation control, and learning-based optimization. He discussed the challenges of achieving coordination under limited communication, cyber-attacks, and heterogeneous dynamics, and presented innovative solutions using distributed resilient control, control barrier functions, and deep reinforcement learning. The presentation also demonstrated real-world applications in autonomous transportation, environmental monitoring, defense, and smart logistics, illustrating how AI and control theory jointly enable cooperative intelligence among robotic and cyber-physical systems.

The lecture attracted more than 50 participants, including researchers, engineers, and students from various countries. The audience showed great interest in the topic, actively engaging in discussions about the future of AI-enabled control and multi-agent collaboration.



Figure 1: Group photo after the plenary talk of Prof. Peng Shi