

Reconstruction of the Systematic Curriculum Framework beyond the Fundamental Methods of Cybernetics

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Abstract

This report outlines the historical development of cybernetics and artificial intelligence, as well as their interrelationship. In today's era of rapid AI advancement, industrial applications require AI solutions tailored to the unique characteristics of industry. Algorithms and models developed for commercial or general-purpose use are often unsuitable for industrial settings. Effective application of AI in industry relies on automation professionals' deep understanding of industrial systems, along with practical engineering experience and methodologies. Automation experts thus hold a distinct advantage in industrial AI deployment. As future industrial automation increasingly shifts toward AI integration, the focus will be on integrating AI with industrial environments and control tasks. Talent development in this area is crucial and may position automation professionals to dominate specific market segments, leveraging their strengths effectively.



Shaoyuan Li, the Chair Professor at Shanghai Jiao Tong University, former Vice President of Qingdao University of Science and Technology. His main research interests include adaptive predictive control, satisfactory optimization control, and optimization control for production process systems in networked distributed systems. His key achievements have earned him the First Prize of Shanghai Natural Science Award (first author) in 2006, the Second Prize of the First Yang Jiachi Science and Technology Award in 2010, the First Prize of Natural Science from the Chinese Association of Automation (first author) in 2016, the Second Prize of National Natural Science Award (second author) in 2017, the Special Prize of Shanghai Teaching Achievement Award (first author) in 2017, and the First Prize of National Teaching Achievement Award (first author) in 2018. He also received the First Prize of Shanghai Science and Technology Progress Award (first author) in 2022. In 2008, he was awarded the National Outstanding Youth Fund and selected as a national-level teaching master under the “Ten Thousand Talents Program”, leveraging his strengths to contribute significantly.