

Intelligent Systems for a Global World

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Computer and communication technologies are rapidly shrinking the world. While companies are more global and service infrastructures are increasingly distributed, there is a need for higher levels of performance, integration, and interoperability. Fortunately, there is a significant convergence of cost-effective products based on high performance computer hardware, high speed wireless networking products and standards, and platform independent software. Personal robots with the ability to communicate by engaging multiple senses assist people in their daily tasks. Machine learning and pattern recognition algorithms automatically learn to recognize complex patterns from data and recommend decisions. RFID systems provide improved services for supply chain and healthcare management. Brain-machine interfaces are beginning to transform thought into action and sensation into perception. Finally, systems previously depending on client-server networks are being integrated using new serverless architectures of distributed intelligent systems that provide improved robustness, scalability, and flexibility.

This lecture presents an overview of intelligent systems that are changing our lives and businesses with emphasis on the technologies of systems science and engineering, human-machine systems, and cybernetic systems. Applications of intelligent systems will be presented from a variety of fields including robotics, manufacturing automation, RFID, healthcare, distributed energy management, and integrated digital services.