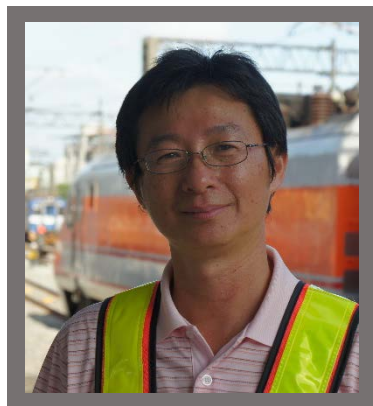


## Smart Brain with Fast Simulation Optimization for the Industrial Internet and Industrial 4.0

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### Abstract

Simulation is an established tool for predicting and evaluating the performance of complex stochastic systems that are analytically intractable. Recent research in simulation optimization and explosive growth in computing power have made it feasible to use simulations to optimize the design and operations of systems directly. Concurrently ubiquitous sensing, pervasive computing, and unprecedented systems interconnectivity have ushered in a new era of industrialization (the so-called Industrial Internet/Industrial 4.0). By capitalizing on an unprecedented integration of sensing, computing, and control, simulation optimization provides the “smart brain” required to drastically improve the efficiency of industrial systems. We explore the potential of simulation optimization and present some of our promising approaches, including multi-fidelity/multi-scale simulation optimization and optimal computing budget allocation.

### Biosketch

Chun-Hung Chen received his Ph.D. degree from Harvard University in 1994. . He is currently a Professor at George Mason University. Dr. Chen was an Assistant Professor at the University of Pennsylvania before joining GMU. He was also affiliated with National Taiwan University (Electrical Eng. and Industrial Eng.) from 2008-14. Sponsored by NSF, NIH, DOE, NASA, FAA, Missile Defense Agency, and Air Force in US, he has worked on the development of very efficient methodology for simulation-based decision making and its applications. Dr. Chen received several awards such as “National Thousand Talents Award” from China and Eliahu I. Jury Award from Harvard University. He has served as a Department Editor for IIE Transactions, Department Editor for Asia-Pacific Journal of Operational Research, Associate Editor for IEEE Transactions on Automation Science and Engineering, Associate Editor for IEEE Transactions on Automatic Control, Area Editor for Journal of Simulation Modeling Practice and Theory, Advisory Editor for International Journal of Simulation and Process Modeling, and Advisory Editor for Journal of Traffic and Transportation Engineering. Dr. Chen is the author of two books, including a best seller: “*Stochastic Simulation Optimization: An Optimal Computing Budget Allocation*”. He is an IEEE Fellow.

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