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Released: March 2012

## Software and Intelligent Sciences: New Transdisciplinary Findings

Yingxu Wang (University of Calgary, Canada)

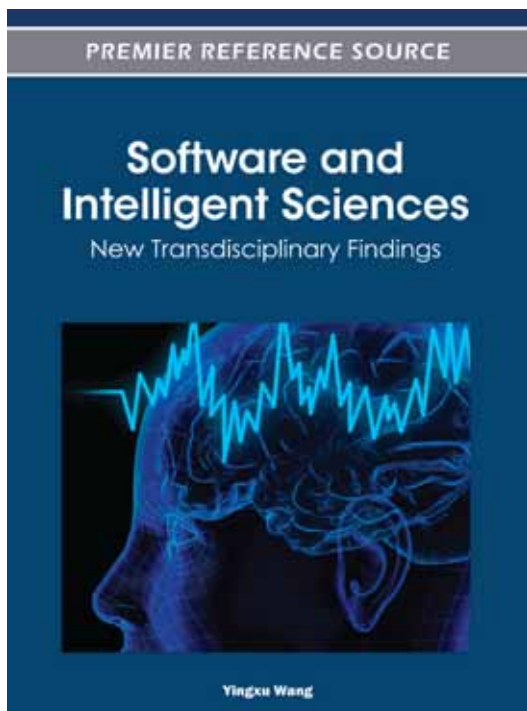
The junction of software development and engineering combined with the study of intelligence has created a bustling intersection of theory, design, engineering, and conceptual thought.

**Software and Intelligent Sciences: New Transdisciplinary Findings** sits at a crossroads and informs advanced researchers, students, and practitioners on the developments in computer science, theoretical software engineering, cognitive science, cognitive informatics, and intelligence science. The crystallization of accumulated knowledge by the fertilization of these areas, have led to the emergence of a transdisciplinary field known as software and intelligence sciences, to which this book is an important contribution and a resource for both fields alike.

### Topics Covered:

- Autonomic/autonomous systems
- Granular computing
- Hybrid man-machine systems
- Intelligent software engineering
- Denotational vs. analytic mathematics
- Mathematical models of the brain and mind
- Real-time process algebra (RTPA)
- Cognitive informatics
- Intelligent behavioral foundations of software
- Neural informatics
- Theories for computational intelligence

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ISBN: 9781466602618; © 2012; 423 pp.

Print: US \$195.00 | Perpetual: US \$295.00 | Print + Perpetual: US \$390.00

**Yingxu Wang** is professor of cognitive informatics and software science, President of International Institute of Cognitive Informatics and Cognitive Computing (IICIC), Director of Laboratory for Cognitive Informatics and Cognitive Computing, and Director of Laboratory for Denotational Mathematics and Software Science at the University of Calgary. He is a Fellow of WIF (UK), Fellow of ICIC, a PEng of Canada, a Senior Member of IEEE and ACM. He received a PhD in Software Engineering from the Nottingham Trent University, UK, and a BSc in Electrical Engineering from Shanghai Tiedao University. He has industrial experience since 1972 and has been a full professor since 1994. He was a visiting professor on sabbatical leaves in the Computing Laboratory at Oxford University in 1995, Dept. of Computer Science at Stanford University in 2008, the Berkeley Initiative in Soft Computing (BISC) Lab at University of California, Berkeley in 2008, and MIT (2012), respectively. He is the founder and steering committee chair of the annual IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI\*CC). He is founding Editor-in-Chief of International Journal of Cognitive Informatics and Natural Intelligence (IJCINI), founding Editor-in-Chief of *International Journal of Software Science and Computational Intelligence* (IJSSCI), Associate Editor of *IEEE Trans on System, Man, and Cybernetics* (Part A), and associate Editor-in-Chief of *Journal of Advanced Mathematics and Applications*.

Dr. Wang is the initiator of a few cutting-edge research fields or subject areas such as *Cognitive Informatics* (CI, the theoretical framework of CI, neuroinformatics, the logical model of the brain (LMB), the layered reference model of the brain (LRMB), the cognitive model of brain informatics (CMBI), the mathematical model of consciousness, and the cognitive learning engine); *Abstract Intelligence*, *Cognitive Computing* (such as cognitive computers, cognitive robots, cognitive agents, and cognitive Internet); *Denotational Mathematics* (i.e., concept algebra, inference algebra, semantic algebra, real-time process algebra, system algebra, granular algebra, and visual semantic algebra); *Software Science* (on unified mathematical models and laws of software, cognitive complexity of software, and automatic code generators, the coordinative work organization theory, and built-in tests (BITs)); basic studies in *Cognitive Linguistics* (such as the cognitive linguistic framework, the deductive semantics of languages, deductive grammar of English, and the cognitive complexity of online text comprehension). He has published over 130 peer reviewed journal papers, 220+ peer reviewed conference papers, and 25 books in cognitive informatics, cognitive computing, software science, denotational mathematics, and computational intelligence. He is the recipient of dozens international awards on academic leadership, outstanding contributions, research achievement, best papers, and teaching in the last three decades.

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