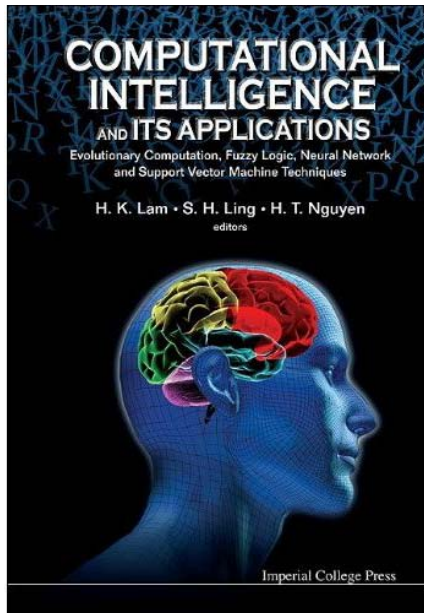


## H. K. LAM, STEVE S. H. LING, HUNG T. NGUYEN (EDITORS) COMPUTATIONAL INTELLIGENCE AND ITS APPLICATIONS



**Imperial College Press**  
London  
ISBN 978-1-84816-692-9  
(ebook)  
ISBN 978-1-84816-691-2  
(Hardcover)  
300 pages, 2012

The sub-title of this recent publication conveys the scope of the chapters: Evolutionary Computation, Fuzzy Logic, Neural Network and Support Vector Machine Techniques, and the four sections into which the book is divided indicate the range of topics: *Evolutionary Computation and Its Applications*; *Fuzzy Logics and Their Applications*; *Neural Networks and Their Applications*; *Support Vector Machines and Their Applications*.

There are twelve substantial chapters within the book, each chapter with a list of contents, including a reference list. As there is also an index at the back of the book it is quite easy to navigate around the book. The authors come from the UK, Singapore, China (including Hong Kong) and Australia.

The computational intelligence in the title means that each chapter builds on fundamental concepts and the essential analysis of various computational to illustrate the design procedure and the effectiveness of the approaches. The applications referred to in the title cover a wide range of applications from pattern recognition and system modeling, to intelligent control problems and biomedical applications.

I shall concentrate on one such chapter which is close to my own research interests, namely, Chapter Four: “Hypoglycemia Detection for Insulin-dependent Diabetes Mellitus: Evolved Fuzzy Inference System Approach” by Steve Ling, PP San and Hung T Nguyen of the Centre for Health Technologies within the Faculty of Engineering and Information Technology at the University of Technology, Sydney, Australia.

The purpose of the research described in this twenty five page exposition is to measure physiological parameters continuously in order to provide a non-invasive hypoglycemia detection for Type 1 diabetes mellitus (T1DM), particularly nocturnal hypoglycaemia. This is built on an evolved fuzzy inference system which was tested on fifteen subjects with T1DM at the Princess Margaret Hospital for Children in Perth, Western Australia. The results showed that the detection of hypoglycaemic episodes could be achieved utilising a wavelet mutation-based fuzzy reasoning model developed from the clinical data.

This chapter seemed typical in that it was pitched at a readership of graduates and researchers in computer science, especially those specialising in fuzzy logic and pattern recognition. It is highly recommended.

**A. G. Shannon**  
**University of Technology, Sydney, Australia**

**Table of Contents****Front Matter***H. K. Lam, S. H. Ling, H. T. Nguyen* ..... i**Evolutionary Computation and its Applications****Maximal Margin Algorithms for Pose Estimation***Ying Guo, Jiaming Li*.....3**Polynomial Modeling in a Dynamic Environment based on a Particle Swarm Optimization***Kit Yan Chan, Tharam S. Dillon* .....23**Restoration of Half-toned Color-quantized Images Using Particle Swarm Optimization with Multi-wavelet Mutation***Frank H. F. Leung, Benny C. W. Yeung, Y. H. Chan* .....39**Fuzzy Logics and their Applications****Hypoglycemia Detection for Insulin-dependent Diabetes Mellitus: Evolved Fuzzy Inference System Approach***S. H. Ling, P. P. San, H. T. Nguyen*.....61**Neural Networks and their Applications****Study of Limit Cycle Behavior of Weights of Perceptron***C. Y. F. Ho, B. W. K. Ling* .....89**Artificial Neural Network Modeling with Application to Nonlinear Dynamics***Yi Zhao* .....101**Solving Eigen-problems of Matrices by Neural Networks***Yiguang Liu, Zhisheng You, Bingbing Liu, Jiliu Zhou* .....127**Automated Screw Insertion Monitoring Using Neural Networks:****A Computational Intelligence Approach to Assembly in Manufacturing***Bruno Lara, Lakmal D. Seneviratne, Kaspar Althoefer* .....183**Support Vector Machines and their Applications****On the Applications of Heart Disease Risk Classification and Hand-written Character Recognition Using Support Vector Machines***S. R. Alty, H. K. Lam, J. Prada*.....213**Nonlinear Modeling Using Support Vector Machine for Heart Rate Response to Exercise***Weidong Chen, Steven W. Su, Yi Zhang, Ying Guo, Nghir Nguyen, Branko G. Celler, Hung T. Nguyen*.....255**Machine Learning-based Nonlinear Model Predictive Control for Heart Rate Response to Exercise***Yi Zhang, Steven W. Su, Branko G. Celler, Hung T. Nguyen*.....271**Intelligent Fault Detection and Isolation of HVAC System Based on Online Support Vector Machine***Davood Dehestani, Ying Guo, Sai Ho Ling, Steven W. Su, Hung T. Nguyen*.....287**Back Matter***H. K. Lam, S. H. Ling, H. T. Nguyen*.....305