

## DR. XIAOJING (JANE) YUAN

### EDUCATION

- Ph.D., August, 2003, Tulane University, Robotics and Automation  
Dissertation: Intelligent sensor model and real-time multi-sensor fusion: architecture and algorithm
- M.S. , May, 2002, Tulane University, Computational Intelligence (Artificial Intelligence)  
Thesis: Application of evolutionary strategy for multi-scale feature identification
- M.S. , July, 1997, University of Science and Technology of China, Computer Aided Automation
- B.S., July, 1994, Hefei University of Technology, Electrical Engineering, P.R.China

### COURSES TAUGHT

- University of Houston: Linear System Analysis (ELET 3201), Control Instrumentation (ELET 3304), and Control Instrumentation Lab (ELET 3104), Microprocessor Architecture (ELET 3305), and Microprocessor Architecture Lab (ELET 3104), Applied Digital Signal Processing in Bio-Medical Engineering Technology (ELET 4397)
- Tulane University: Introduction to Robotics, Elements of Electrical Engineering

### PROFESSIONAL EXPERIENCE

- Assistant Professor, Engineering Technology Department, University of Houston, Fall 05 – present.
- Visiting Assistant Professor, Engineering Technology Department, University of Houston, Aug. 2004 – Aug. 2005.
- Postdoctoral researcher, Image Understanding Lab, Tulane University, 2003 – July 2004.
- Instructor and Research Assistant, School of Engineering, Tulane University, 1997 – July 2004.
- Computer System and Network Administrator, Mechanical Engineering Department, Tulane University, 2001 – 2002.
- Instructor, Automation and Control Department, University of Science and Technology of China, 1996 – 1997.
- Undergraduate research assistant, Computer and Network Communication Center, Hefei University of Technology, China, 1992 – 1994.

### RESEARCH INTERESTS

- BioMedical Signal and Image Processing: Filter banks for texture analysis, evolutionary computation for image segmentation, registration, and fusion; Decision trees and support vector machines for gene sequence analysis, and skin cancer early detection and diagnosis
- Intelligent system modeling and simulation: intelligent sensor models, system fault detection and identification, multi-sensor validation and fusion, and system simulation
- Distributed Sensor Network for health and disease management: wireless sensor network, , intelligent health monitoring for distributed nodes in the network, sensor network energy management

## SCHOLARLY ACCOMPLISHMENTS

### FUNDED PROJECTS

1. Feb. 2006, "Applying wireless sensor network to chronic disease management", PI, \$10k
2. Feb. 2006, "UH New Faculty Research Program", PI, \$6k
3. Oct. 2005, Environmental Institute of Houston, PI, \$13.5k
4. August 2005, HEAF (Higher Education Assistance Fund), \$70k + \$70k matching.
5. July 2005, "COT/SBC Technology Alliance", co-PI, \$250k.

#### PUBLISHED BOOKS AND PARTS OF BOOKS:

1. X. Yuan, Ph.D Dissertation, "Real Time Sensor Fusion: Architecture and Algorithms," Tulane University, 2003, 8.
2. X. Yuan, Master Thesis, "Application of Evolutionary Strategy for Multi-scale Feature Identification," Tulane University, 2002, 5.

#### ARCHIVAL JOURNAL ARTICLES:

1. X. Yuan, J. Zhang, and B. Buckles, "Multi-scale Feature Identification using Evolution Strategies," *Image and Vision Computing Journal*, vol. 23/6, pp. 555-563, 2005.
2. X. Yuan, F. Figueroa, B. Buckles, and X. Li, "Real Time Sensor Fusion Framework for Distributed Intelligent Sensors," submitted to *International Journal on Artificial Intelligence Tools (IJAIT)*.
3. X. Yuan, B. Buckles, F. Figueroa, "An Open System Framework for Distributed Autonomous Sensor Network," submitted to *International Journal on Multi-Sensor, Multi-Source Information Fusion*
4. X. Yuan, P. Zhang, "The Fault Tolerance Technique and Implementation in the Electronic System," *HFUT Journal*, 1997, 6.
5. P. Zhang, X. Yuan, "The Design of the Three Level Management System of the Intellectual Time Multi Counting Electric Meter," *USTC Journal*, 1997,1.
6. P. Zhang, X. Yuan, "The Usage of Calendar and Clock IC PCF8583 and its Interface with Single Chip Computer," *AnHui Electrical Power Journal*, 1995,12.
7. J. Wang, X. Yuan, and Y. Zhang, "Database Integrated Technique in Delphi," *Journal of Anhui Electric Power College*, 7(3): 65-68, 2002, 9.

#### REFEREED CONFERENCE PRESENTATIONS WITH PROCEEDINGS:

1. Z. Yang\*, X. Yuan, N. Mullani, and G. Zouridakis, "SVM-based Texture Filtering and Classification and Application to Early Melanoma Detection", *HSEMB 2006*, Feb. 2006, Houston.
2. Y. Chen, X. Yuan, "Collaborative Decision Making for Hazardous Substance Monitoring", accepted to be published in the proceeding of *the 2<sup>nd</sup> International Workshop on Networked Sensing Systems*, June 27-28, 2005, San Diego, California, USA.
3. X. Yuan, X. Li, X. Yuan, "Real-time sensor fusion framework for distributed sensor network," *proceeding of 17<sup>th</sup> International FLAIRS conference, sensor fusion sub panel*, May, 2004, Miami Beach, Florida.
4. X. Yuan, X. Li, B. Buckles, "Real-time sensor fusion framework based on distributed intelligent sensors," *SPIE 2004 Defense and Security Symposium, Multisensor, Multisource Information Fusion: Architectures, Algorithms, and Applications*, April 13-15, 2004, Orlando, Florida, USA.
5. X. Yuan, "Plant monitoring and diagnosis by transient identification: the fuzzy approach," *proceeding of FUZZ-IEEE2003, May 25-28, St. Louis, MO*.
6. X. Yuan, F. Yang, J. Peng, and B. Buckles, "Gene Expression Classification: Decision Trees vs. SVMs," *proceeding of 16<sup>th</sup> International FLAIRS Conference, May 2003, St. Augustine, Florida*.

7. X. Yuan, B. Buckles, and J. Zhang, "Gene-structural Based SVM for Gene Expression Classification," Workshop on Bio-informatics, *ICDE 2003*.
8. X. Yuan, J. Zhang, B. Buckles, "Low Level Fusion of Imagery Based on Dempster-Shafer Theory," proceeding of *FLAIRS 2003, May12-14, St. Augustine, Florida*.
9. F. Figueroa, X. Yuan, "Intuitive Intelligent Sensor Fusion with Highly Autonomous Sensors," *Symposium on Instrumentation, Measurements, and Sensors, Dynamic Systems and Control Division, Nov., IMECE 2001*.
10. F. Figueroa, X. Yuan, "Sensor Fusion for a Network of Processes/Systems with Highly Autonomous Sensors," *International Workshop on Virtual and Intelligent Measurement Systems*, 19-20 May 2001, Budapest, Hungary.
11. F. Figueroa, X. Yuan, "A Sensor Fusion Method for a Network of Highly Autonomous Sensor," *Symposium on Instrumentation, Measurements, and Sensors, Dynamic Systems and Control Division, Nov., IMECE 2000*.
12. F. Figueroa, X. Yuan, "A Taxonomy and Environment to Model any Sensor as Highly Autonomous Sensor," *International Workshop on Virtual and Intelligent Measurement Systems*, 29-30 April 2000, Annapolis, MD, USA.
13. J. Zhang, X. Yuan, B. Buckles, C. Koutsougeras, and S. Amer, "Niching in an ES/EP Context," *Proc. Congress on Evolutionary Computation*, Washington, D.C., July 1999, pp.1426-1433.
14. B. Buckles, C. Koutsougeras, X. Yuan, "Image Decomposition Using Evolutionary Strategy," *Proc. JCIS'98, Vol. II, Second Intern. Workshop on Evolutionary Algorithms*, Research Triangle Park, NC, 1998, pp. 395-398.

\* Graduate student

#### PAPER DRAFTS AND PAPER UNDER PREPARATION:

1. X. Yuan, B. Buckles, F. Figueroa, X. Li, submitted to Journal of Computer Communication, Special Issue on "Sensor and Actuator Networks", Jan. 2006.
2. X. Yuan, M. Moges, "Integrated Scheduling Algorithm for linearly chained sensor networks based on divisible load model", submitted to MobiCom 2006.
3. X. Yuan, X. Li, Z. Yuan, "Ubiquitous Wellness and Disease Management System based on Wireless Intelligent Sensor Network", submitted to UIC 2006.
4. X. Yuan, Z. Yang, R. Jiamthaphaksin, N. Mullani, G. Zouridakis, "SVM-based Texture Classification and Application to Early Melanoma Detection", submitted to EMBC 2006.
5. X. Yuan, M. Moges, "Integrated Scheduling Algorithm for Personalized Disease Management Applications", submitted to EMBC 2006.
6. X. Yuan, K. Zhang, W. Fan, and X. Li, "Ground Ozone Alert Forecasting via Probabilistic Decision Tree Methods", submitted to ECML/PKDD 2006.

#### INVITED TALKS AND PRESENTATIONS

- International FLAIRS Conference, 2002, 2003, and 2004.
- IEEE International Conference on Fuzzy Systems, May 2003.
- Department of Electrical Engineering and Computer Science, Tulane University, Nov. 2003.
- Department of Mechanical Engineering, Tulane University, March 2002.
- ASME International Mechanical Engineering Congress and RD&D Expo, 2000, 2001.

## **OTHER SCHOLARLY ACCOMPLISHMENTS:**

### **REVIEWER:**

FLAIRS2006, Co-Chair, “Intelligent Distributed Sensor Network”  
Journal of Computer Communications, Special Issue on “Sensor-Actuator Networks (SANETs)”

### **PATENTS AND INVENTION DISCLOSURES**

Peiren Zhang, Xiaojing Yuan, New product and technology patent, China Patent Number 95 2 40843.0

### **PROPOSALS AND WHITE PAPER SUBMITTED**

1. April 2006, NASA SSC Dual Use Program, Notice of Intention, co-PI.
2. April 2006, NASA: “FIST: Feasibility of an Intelligent Sensor Network Testbed for ISHM”, co-PI.
3. March 2006, FDIP Program A, PI.
4. March 2006, FDIP Program B, PI.
5. Jan. 2006, “NSF-PCAN:,” co-PI, NSF-PCAN program.
6. Jan. 2006, University GEAR program, PI.
7. Jan. 2006, NASA ROSES-AIST Notice of Intention, PI.
8. Jan. 2006, Microsoft Digital Inclusion, PI.
9. Sept. 2005, NSF REU, key team member.
10. Dec. 2005, Texas Emergent Technology, PI.
11. Nov. 2005, UH Small Grant Program, PI.
12. July, 2005, “Early detection of melanoma: improvement of an automated decision support system”, co-PI, NIH R03, \$148,500, 04/01/06 – 03/31/08.
13. March, 2005, “TLCC: Development of a GUI for a system of automated skin cancer detection,” co-PI, TLCC innovative research funding grant.
14. March, 2005, “SST: Hazardous Substance Spreading Pattern Recognition Using Embedded Multi-Scale Intelligence in Geographically Distributed Sensor Networks,” co-PI, NSF-Sensor and Sensor Network Program.
15. Jan. 2005, “NeTS-NOSS: FPGA-Based Autonomous Sensor Network Protocol for In-Network Collaborative Decision Making in Real-Time Emergency First Response Systems,” co-PI, NSF-NeTS program.
16. Dec. 2004, “Expert Based Variable Resistance/Assistance Exercise Machine”, submitted to Health Initiative – Regional Translational Research Center Proposal, key team member.
17. Oct. 2004, “Exploring Opportunity Identification Models Among Women In Stem Related Academic Programs and Jobs,” NSF, key team member.