

October 2011

## **Biographical Sketch**

### **ZVI S. ROTH**

Professor and Associate Chairman  
Department of Computer and Electrical Engineering and Computer Science  
Florida Atlantic University  
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#### **1. Academic Degrees**

Ph.D. in Systems Engineering, Case Western Reserve University, Cleveland, Ohio, December 1982  
M.Sc. in Electrical Engineering, Technion, Israel Institute of Technology, Haifa, Israel, July 1979.  
B.Sc. in Electrical Engineering, Technion, Israel Institute of Technology, Haifa, Israel, September 1974

#### **2. Employment History**

2009 – Present Professor and Associate Chair, CEECS Department, FAU  
1982 - 2009 Professor, Department of Electrical Engineering, FAU  
2005 – 2008 Interim co-Director, Florida-Israel Institute  
1993 - 1997 Professor and Chairman, Dept. of Electrical Engineering, FAU  
1985 - 1994 Director of the Florida Atlantic University Robotics Center

#### **3. Courses recently developed or modernized: Undergraduate level: Fundamentals of Engineering (hands-on freshmen-level course), Electronics I and II (with PSPICE computer-aided analysis and design), Control Systems I (with Matlab / Simulink system design), Introduction to DSP (with Matlab). Graduate level: CMOS Amplifiers (with PSPICE and ADS design), Biosystems Modeling and Control (with Matlab / Simulink simulations).**

#### **4. Thesis Advisor to 7 Ph.D. (Drs. Tuula Ruokonen, Hanqi Zhuang, Xu Hua, Jian Wang, Kuanchih Wang, Shui Hu-Motaghedi and Ying Bai - graduated between 1989-2001) and 2 current PhD candidates (Aura-Maria Cardona, expected to graduate in Fall 2011) and Wilfredo Rivas-Torres (expected to graduate in Spring 2013) and 11 M.S. students.**

#### **5. Current Research Interests**

a) Kinematic Modeling, Metrology (Vision and Laser Tracking), Kinematic Identification, Control and Calibration of Robots and Manufacturing Machinery.  
b) Control Systems – PID Control, Lyapunov-type Nonlinear Control, Sliding-Mode Control, Kalman Filters and Nonlinear Filters in Fault Detection and Diagnosis.  
c) Analog Electronic Design – Computer-Aided design of CMOS analog circuits.  
d) Bioengineering: Glucose Metabolism and Closed-loop Drug Delivery in Diabetes, High-Throughput Biotechnology Automation Design, Rational Vaccine Design.

## 6. Publications

Dr. Roth authored 2 Books, 3 Book Chapters, 30 Journal Papers, 27 Refereed Conference Papers and 42 non-refereed Papers and Technical Reports.

### 6.1 Books

- a) B. W. Mooring, Z. S. Roth and M. R. Driels, "*Fundamentals of Manipulator Calibration*", Book, John Wiley and Sons, 1991.
- b) H. Zhuang and Z. S. Roth, "*Camera-Aided Robot Calibration*", Book, CRC Press, 1996.

### 6.2 Recent Journal Papers

- 1) Aura-Maria Cardona, Zvi S. Roth and Chingping Han, "High-Throughput Automation Design Considerations for Biotechnology Processes Involving RNA Purification Protocols using Multi-Centrifuge Bioseparation Steps", Accepted to the Journal of Robotics and Computer-Integrated-Manufacturing
- 2) Banton, S.A., Roth, Z., Pavlovic, M. *A bioengineering approach for rational vaccine design towards the Ebola Virus*. BMC Bioinformatics, Special Issue: ISMB (Intelligent Systems for Molecular Biology) 2010, July 8-11, 2010, Boston, Massachusetts
- 3) Perambur S. Neelakanta, Meta Leesirikul, Zvi Roth and Salvatore Morgera, "A Complex System Model of Glucose Regulatory Metabolism", Complex Systems, 16 (2006) 343-367.
- 4) David C. Sheats, Zvi S. Roth and Joseph W. Snyder, "Autotune of PID Temperature Control Based on Closed-Loop Step Response Tests", Proceedings of CEC Advances in Cryogenic Engineering, 2006

## 7. Sponsored Research

Total grants to date: **\$3,528,961** (of which **\$2.9 millions** were State of Florida annual funding to the FAU Robotics Center, with Dr. Roth as PI, obtained from October 1986 till June 1994). The Robotics Center has graduated over 30 PhDs during the late 80's till the early 2000's period. State of Florida total funding for the Florida-Israel Institute was \$250,000 from July 2006 till June 2008.

Most recent grant: NSF (RAPD Program) (with Drs. Zhuang and Masory), "Results-Oriented Multi-Disciplinary Capstone Design to Aid Persons with Disability" \$125,000 (2011-2015).

## 8. Honors and Awards

1. Senior Member of the IEEE (conferred in 1992)
2. 2001/2002 FAU Award for Excellence in Undergraduate Teaching.
3. Finalist, 2005-2006 FAU Distinguished Teacher of the Year Award