

# Bruce Lanier Walcott

## EDUCATION

BSEE, Purdue University, West Lafayette, IN, May 1981 (with Highest Distinction)

MSEE, Purdue University, West Lafayette, IN, August 1982

Ph.D., Purdue University, West Lafayette, IN, December 1986

## PROFESSIONAL EMPLOYMENT

1/87 - 6/87: Visiting Assistant Professor at Purdue University.

6/89 - 8/89, 6/90 - 8/90: Summer Faculty Fellow at NASA's MSFC in Huntsville, Alabama.

7/87 - 6/91: Assistant Professor of Electrical Engineering at the University of Kentucky.

7/92 - 8/95: Director of Graduate Studies in Electrical Engineering at the University of Kentucky.

7/91 - 7/02: Associate Professor of Electrical Engineering at the University of Kentucky.

1/96 - : President and Co-founder of Infinite Horizon, LLC.

7/99 - : Associate Dean of the College of Engineering at the University of Kentucky.

7/02 - : Professor of Electrical and Computer Engineering at the University of Kentucky.

7/03 - : College of Engineering Alumni Professor at the University of Kentucky.

1/04 - 7/07 :Co-Founder and Interim Director of UK Center for Visualization and Virtual Environments

7/07 - : Director of UK Center for Manufacturing

## RECENT AWARDS AND HONORS

1. Recipient of 1994 C. Holmes MacDonald Distinguished Young Electrical Engineering Teaching Award
2. Recipient of 1994 Tau Beta Pi Outstanding Professor Award at the University of Kentucky
3. Recipient of 1995 Great Teacher Award at the University of Kentucky
4. Recipient of 1996 Tau Beta Pi Outstanding Professor Award
5. Recipient of 1997-1998 IEEE Joseph M Biedenbach Outstanding Engineering Educator Award
6. Recipient of 1998 Outstanding Teacher Award in Electrical Engineering at the University of Kentucky
7. 3rd Place Winner of 1998 IEEE Educational Website Competition (Region 3)
8. Recipient of 1999 IEEE Outstanding Branch Counselor Award (one of 10 worldwide)
9. Recipient of 2000 IEEE Millenium Medal
10. Recipient of 2000 Tau Beta Pi Outstanding Professor Award at the University of Kentucky
11. Recipient of 2001 Outstanding Teacher Award in Electrical Engineering at the University of Kentucky
12. Recipient of 2003 Outstanding Teacher Award in Electrical Engineering at the University of Kentucky
13. College of Engineering Alumni Professor 2003 at the University of Kentucky
14. Finalist Provost Award for Outstanding Teacher 2004 (tenured) at the University of Kentucky
15. 2006 Student Technology Leadership Program Outstanding Mentor
16. Honorary Inductee - Triangle Engineering Society, 2007
17. Outstanding Paper Award, ASEE NCS Conference, 2007
18. Outstanding Paper Award, ASEE Zone II, 2007
19. Outstanding Paper Award Finalist, ASEE National Conference, 2008

## AREA OF RESEARCH SPECIALIZATION

Observation and control of nonlinear systems, output feedback stabilization of nonlinear systems, deterministic control of uncertain system, deterministic estimation of uncertain systems, variable structure systems, modeling of flexible systems by uncertain methods, variable structure control of flexible systems, intelligent identification and control via neural networks FLC, and genetic algorithms, active vibration control of nonlinear systems

## RECENT GRANTS AND CONTRACTS

1. PI on Cypress Semiconductor Grant of \$17,600 February 1999 - April 2000
2. PI on Intranasal Technology Grant of \$13,000 March 2000 - August 2000
3. PI on Intranasal Technology Grant of \$243,000 July 2000 - August 2001
4. Co-PI on Intranasal Technology Grant of \$ July 2000 - August 2001
5. Co-PI on NSF CSEM Grant of \$270,000 July 2001 - June 2003
6. PI on Lexmark ECAT Equipment Grant of \$150,000 October 2001

7. PI on Intranasal Technology Grant of \$33,538 April 2002 – September 2002
8. Co-PI on DoD STTR Phase I Grant, “Exploitation of Nonlinear Wave Phenomena in Sensing and Communication,” \$100,000 (\$27,000 UK Subcontract) July 2002-June 2003
9. PI on KEDFA Visualization Center Grant of \$5,200,000 June 2002- July 2008
10. PI on STLP Grant of \$5,000, October 2003 – June 2004
11. PI on NSF CSEMs Grant of \$200,000, October 2004 – July 2008
12. PI on STLP Grant of \$4,000, October 2003 – June 2004
13. Co-PI on DoD Visualization Grant of \$960,000, October 2004 – October 2005
14. Co-PI on KDE \$300,000 Grant, “The Mathematics Instructional Learning Community,” June 2005 – June 2008
15. PI on STLP Grant of \$4,000, October 2004 – June 2005
16. Co-PI on DoD Visualization Grant of \$980,000 October 2005 – October 2006
17. PI on STLP Grant of \$3,000, October 2005 – June 2006
18. PI on DoD “Rapidly Deployable Visualization Environments,” \$1,100,000 October 2005-September 2006
19. PI on STLP Grant of \$3,000, October 2006 – June 2007
20. Co-PI on CPE PLTW Grant of \$50,000 January 2007 – December 2008
21. Co-PI on GE Virtual Appliance Suite of \$49,000 January 2007 – July 2007
22. PI on DoD “Visualization Environments for Military Training,” \$900,000 October 2007-September 2009

**TOTAL GRANT FUNDING: \$11,300,000**

#### **PATENTS**

1. U.S. Patent, #5,170,103, “Active vibration control device,” Dec. 4, 1992
2. Australian Patent # 655655, “Active vibration control device,” Dec. 30, 1992
3. International patent #WO 9220482, “Active vibration control device,” Nov. 26, 1992
4. U.S. Patent, #5,570,903 “Occupant and infant seat detection in a vehicle supplemental restraint system,” Nov. 26, 1996
5. Canadian Patent #CA 2169868, “Intelligent control of Air Bag Deployment,” Feb. 20, 1996
6. U.S. Patent, #5,678,854 “Intelligent control of Air Bag Deployment,” Oct. 21, 1997
7. U.S. Patent, #5,797,736 “Radiation modulator system,” August 25, 1998
8. Canadian Patent #CA 2097915 “Active vibration control device,” Aug. 8, 2000
9. International Patent, WO 0213886, “Programmable Multi-Dose Intranasal Drug Delivery Device,” February 21, 2002
10. U.S. Patent, #6,823,133 “Apparatus and method for electronic control of DC motor using an all-digital phase-locked loop” Nov 23, 2004.
11. U.S. Patent, #6,916,115, “System and device for characterizing shape memory alloy wires, July 12, 2005
12. U.S. Patent # 6,948,492, “Programmable Multi-Dose Intranasal Drug Delivery Device,” September 27, 2005
13. U.S. Patent #7,103,425, “Method of regulating a target system using a frequency comparison of feedback and reference pulse trains,” Sept 6, 2006
14. U.S. Patent # 7,555,900, “Linear actuator using shape memory wire with controller,” July 7, 2009

#### **FIVE RECENT RELEVANT PUBLICATIONS**

1. “Precision instrument for characterizing shape memory alloy wires in bias spring actuation,” *Review of Scientific Instruments*, Vol 76, pp. 065105-1 to 065105-5, June 2005 (with S. Chikkamaranahalli, R. Vallance, E. Marsh, O.A. Rawashdeh, and J.E. Lump).
2. “Wideband image suppression in low-IF receivers,” *Proc. of IEEE 48th Midwest Symposium on Circuits and Systems*, pp. 345-348, August 7-10, 2005 (with E. Seagraves).
3. “Adaptive Interval Control of Arc Welding Processes,” *IEEE Trans. on Control Systems Technology*, Vol. 14, No. 6 pp. 1127-1134, November 2006 (with J. Zhang).
4. “Equalization of Volterra systems using a multilinear SVD based pseudo p th order inverse,” *Proc. of IEEE 50th Midwest Symposium on Circuits*, 2007.

5. "Immersing High School Students in Engineering and Entrepreneurship," in *Proc. of 114<sup>th</sup> ASEE Annual Conference*, Honolulu, HI, June 24-27, 2007.