

# PROFESSIONAL VITAE

**Winncy Du, Professor, PhD, PE, ASME Fellow**

## EDUCATION

**PhD** in Mechanical Engineering, *Georgia Institute of Technology*, Atlanta, GA, 1999

**MS** in Engineering, *Georgia Institute of Technology*, Atlanta, GA, 1999

**MS** in Mechanical Engineering, *West Virginia University*, Morgantown, WV, 1994

**BS** in Mechanical Engineering, *Jilin University*, Changchun, China, 1983

## PROFESSIONAL TITLES & CERTIFICATES

**Fellow**, American Society of Mechanical Engineers, 2010

**PE** (Professional Engineer) Certificate, No. 25052, *State of Georgia*, 1999

**CIMS** (Computer Integrated Manufacturing Systems) Certificate, *Georgia*, 1999

**EIT** (Engineer-In-Training) Certificate, No. 18369, *State of Georgia*, 1997

## ACADEMIC APPOINTMENTS

**Professor**, Dept. of Mechanical & Aerospace Engineering, *SJSU*, 2011-Present

**Director**, Robotics & Manufacturing Lab, *SJSU* 2004-Present

**Associate Professor**, Dept. of Mechanical & Aerospace Engineering, *SJSU*, 2006-2011

**Assistant Professor**, Dept. of Mechanical & Aerospace Engineering, *SJSU*, 2000-2006

**Assistant Professor**, School of Technology, *Georgia Southern University (GSU)*, Statesboro, GA, Jan. 2000-May 2000

**Teaching/Research Assistant**, George W. Woodruff School of Mechanical Engineering, *Georgia Institute of Technology (GT)*, 1994-1999

**Research Assistant**, Mechanical & Aerospace Engineering, *West Virginia University*, Morgantown, WV, 1992-1994

**Editor**, Editorial Department of "*Chinese Journal of Mechanical Engineering (CJME)*," Beijing, P.R. of China, 1985-1992

## INDUSTRY EXPERIENCE

**Researcher**, Adept Technology, Inc., Pleasanton, CA, Summer 2006

**Researcher**, Lockheed Martin Space Systems, Sunnyvale, CA, Summer 2005

**Consultant**, Dickerson Vision Technology (DVT), Inc., Atlanta, Georgia, Summer 1995, 1997

**Design Engineer**, Beijing No.1 Machine Tool Company, Beijing, P.R. of China, 1983-1985

## TEACHING EXPERIENCE

ME280 Automatic Control Engineering (SJSU)

ME284 Sensor Technology & Principles (SJSU)

ME285 Mechatronics Systems Engineering (SJSU)

ME187 Automatic Control Systems Design (SJSU)

ME195A&B Senior Design Project (SJSU)

ME192	Robotics and Manufacturing Systems (SJSU)
ME106/EE106	Fundamentals of Mechatronics Engineering (SJSU)
ME101	Dynamics (SJSU)
ENGR 2231	Statics (GSU)
ENGR 1133	Engineering Graphics (GSU)

#### **LAB ASSISTANT**

ME3015	System Dynamics & Control (GT)
ME4053	Mechanical Systems Laboratory (GT)
ME3056	Experimental Methodology (GT)
ME2016	Computing Techniques (GT)

#### **INOVATIVE TEACHING TECHNIQUES DEVELOPED**

Computer-based Pre-Lab Exam System (CPLES)  
Multiple Learning Styles in Engineering e-Education  
Modular Robot Assembly Kit

### **SELECTED PUBLICATIONS**

#### **BOOKS**

1. Du, Winncy, *Resistive, Capacitive and Inductive Based Sensing Technologies*, Taylor & Francis Group, to be published in 2011.
2. Du, Winncy and Yelich, Scott, "Post-Earthquake Pipeline Leak Detection Technologies," Part IX, Chapter 1, *Smart Sensors and Sensing Technology*, Springer-Verlag, 2008, pp. 265-283.

#### **PATENT APPLICATION**

Pipe-climbing Robot, submitted to the SJSU Foundation in June, 2009 (in the University's approval and preparation process for U.S. patent application).

#### **JOURNAL AND CONFERENCE PAPERS**

1. Du, Winncy, Jose, Winston "Design of a Modular Signal Conditioning Circuit for Biopotential Sensors," *Sensor & Transducers Journal*, Vol. 120, Issue 9, September 2010, pp. 1-12.
2. Du, Winncy and Yelich, Scott, "Resistive and Capacitive Based Sensing Technologies," *Sensors & Transducers Journal*, Vol. 90, Special Issue, April 2008, pp. 100-116.
3. Du, Winncy, "Modeling and Control of a Universal Part Feeder (UPF)," *Chinese Journal of Mechanical Engineering*, Vol. 18, No. 3, 2005, pp. 317-320.
4. Du, Winncy, "A Mixed Learning Approach in Mechatronics Engineering," *World Transactions on Engineering and Technology Education*, Vol. 2, No. 1, 2003, pp. 69-72.
5. Du, Winncy, Nguyen, Hai; Scallion, Kevin; and Dutt, Amitesh, "Design of a GMR Sensor Array System for Robotic Pipe Inspection." accepted and to be presented at the *2010 IEEE Sensor Conference*, Nov. 1-4, 2010, Waikoloa, Hawaii.
6. Du, Winncy and Kwok, Gary, "Experimental Comparison of Three Sensor Technologies in Pipe Leak Detection," *Proceedings of 2009 NSF Engineering Research and Innovation Conference*, June 22-25, 2009, Honolulu, Hawaii, Paper Indexed by Grant #0619157.

7. Kwok, Gary and Du, Winncy, "Buildings' Utility Pipes & Their Post-Earthquake Damage Detection," *Proceedings of NEES 6<sup>th</sup> Annual Meeting*, June 18-20, 2008, Portland, Oregon, pp. 1-6.
8. Du, Winncy and Yelich, Scott, "Resistive Sensors: Principles, Design, and Applications," *Proceedings of the 2<sup>rd</sup> International Conference on Sensing Technology*, Nov. 26-28, 2007, Palmerston North, New Zealand, pp. 326-331.
9. Du, Winncy and Yelich, Scott, "Capacitive Sensors: Principles, Design, and Applications," *Proceedings of the 2<sup>rd</sup> International Conference on Sensing Technology*, Nov. 26-28, 2007, Palmerston North, New Zealand, pp. 332-337.
10. Du, Winncy and Yelich, Scott, "Biomechatronics: Emerging Technologies, Applications, and Challenges," *Proceedings of the 3<sup>rd</sup> International Conference on Autonomous Robots and Agents (ICARA)*, Dec. 12-14, 2006, Palmerston North, New Zealand, pp. 129-134.
11. Du, Winncy, and Gonzales, M., "Kalman Filter Design and Implementation for the 2D Real-time Testbed Control Using EVS," *Proceedings of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, July 24-28, 2005, Monterey, CA, pp. 1453-1458.
12. Gonzales, M., and Du, Winncy, "Integration of an External Vision System into a 2D Spacecraft Testbed for Feedback Control," *Proceedings of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, July 24-28, 2005, Monterey, CA, pp. 213-218.
13. Du, Winncy, Furman B., and Mourtos, N., "On the Ability to Design Engineering Experiments," *The 8<sup>th</sup> UICEE Annual Conference on Engineering Education*, Feb. 7-11, 2005, Kingston, Jamaica, pp. 331-336.
14. Du, Winncy, "On Improvement of Graduate Mechatronics Course," *Proceedings of 2005 ASME International Mechanical Engineering Congress & Exposition*, Orlando, Florida, Nov. 5-11, 2005, CD Proceeding: IMECE2005-82968).
15. Ramirez, H., and Du, Winncy, "Modeling & Control of a NiTi Shape Memory Alloy Actuator," *Proceedings of International Federation of Automatic Control*, Sept. 6-8, 2004, Sydney, Australia, pp. 457-462.
16. Du, Winncy, "Development of a Modular Robot Assembly Kit for Robotics Education," *11<sup>th</sup> World Congress In Mechanism and Machine Science (IFTOMM 2003)*, August 18-21, 2003, Tianjin, China.
17. Jones, Kenny C., Du, Winncy, "Development of a Massage Robot for Medical Therapy," *Proceedings of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, July 23-26, 2003, Kobe, Japan, pp. 1096-1101.
18. Du, Winncy, "Design of Proper Course Projects For Effective Student Learning," *Proceedings of International Federation of Automation Control*, Berkeley, California, Dec. 9-11, 2002, pp. 685-690.
19. Du, Winncy, "Achieving Quality Teaching and Learning Through Integrating Proper Research Activities in Mechatronics Education," *Proceedings of 2002 ASME International Mechanical Engineering Congress & Exposition*, New Orleans, Nov. 17-22, 2002 (CD Proceeding: IMECE2002-39471).
20. Du, Winncy, "Overview of Nondestructive Defect Detection Techniques," *Proceedings of the US-Korea Workshop on Smart Infra-Structural Systems*, Pusan, South Korea, Aug. 23-24, 2002, pp. 291-299.

21. Kong, Edmund C., Du, Winncy, "Development of a Nursing Robot for the Elderly and Physically Disabled," *Proceedings of the 8th Mechatronics Forum International Conference*, June 24-26, 2002, Enschede, Netherlands, pp. 794-800.
22. Du, Winncy, "Motion Tracking of a Part on a Vibratory Feeder," *Proceedings of 2001 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, July 8-11, 2001, Como, Italy, pp. 75-80.
23. Du, Winncy, and Dickerson, Stephen L., "The 3D Part's Motion Control on a Horizontal-Vibrating Plate," *Proceedings of the 7th Mechatronics Forum International Conference*, September 6-8, 2000, Atlanta, Georgia. (CD Proceeding: Author Index – Du)
24. Du, Winncy, and Dickerson, Stephen L., "Modelling and Control of a Novel Vibratory Feeder," *Proceedings of IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Sept. 19-23, 1999, Atlanta, Georgia, pp. 496-501.
25. Du, Winncy, and Dickerson, Stephen L., "1-D Vibratory Feeder Control Using Modified PWM Signals," *The 8th International Conference on Intelligent Systems*, June 24-26, 1999, Denver, Colorado, pp. 82-87.
26. Du, Winncy, and Dickerson, Stephen L., "Passive Component Inspection Using Machine Vision," *Proceedings of International Conference and Exhibition on Multichip Modules and High Density Packaging*, April 15-17, 1998, Denver, Colorado, pp. 74-79.
27. Dickerson, Stephen L., Du, Winncy, and Volcy, Jerry, "Integrated Vision Units for Process Monitoring and Feedback in Electronic Assembly," *The Sensors in Electronic Packaging-Symposium, ASME International Mechanical Engineering Congress and Exposition*, Nov., 1995, San Francisco, CA, Vol. 14, pp. 73-78.

## RESEARCH/EDUCATION GRANTS

1. Co-PI, National Science Foundation Research Grant: "NEESR-SG: Experimental Determination of Performance of Drift-Sensitive Nonstructural Systems under Seismic Loading." (\$1.36 Million, 2006-2012)
2. PI, California State University Program for Education and Research in Biotechnology (CSUPERB) Grant: "Design of Fiber Optic Structure for Intravascular Artery Plaque Inspection." (\$22,480, 2006-2007)
3. PI, College of Engineering (COE) Faculty Development Grant: "New Laboratory Development Proposal: COE Smart Sensor Laboratory." (\$17,443, 2006-2007)
4. PI, SJSU-Vision 2010 Grant: "Fostering Student Success through Involving Students in Research, Competition, and Community Projects." (0.2 release time, 2008-2009)
5. PI, California State University Research Grant: "Development of a Textbook with Laboratory Supplement to Include Hands-on Experiments for Educating Next-Generation Engineers on Smart Sensing Technologies." (\$5,591, 2006)
6. Summer Fellowship, Industry Initiatives for Science & Math Education (\$7,500, 2005).
7. PI, College of Engineering Teaching Development Grant: "Implementation of Robotics Laboratory Development through State-of-the-Art Equipment and Technologies." (\$8,980, 2005)
8. PI, SJSU Junior Faculty Career Development Grant: "Research on Sensor Technologies." (\$5,571, 2003-2004)
9. PI, Learning Productive Program Implementation Grant: "Development of a Computer-based Pre-lab Exam System (CPLES) for Student Effective Learning." (\$11,884, 2004)

10. PI, Learning Productive Program Planning Grant: "Development of a Computer-based Pre-lab Exam System (CPLES) for Student Effective Learning." (\$7,485, 2003)
11. PI, Professional Development Grant: "Research on Nanotechnology." (\$2,500, 2003)
12. PI, Grant Development Program Award: "Development of a Faculty Early Career Development (CAREER) Proposal." (0.2 release time, 2003)
13. PI, CSU Awards for Research, Scholarship or Creative Activity (\$5,000, 2002)
14. Summer Fellowship, COE Teaching Excellence Grant: "Development of a Comprehensive Experimental Kit for Engineering Education." (\$12,000, 2002)
15. PI, CSU Awards for Research, Scholarship or Creative Activity (\$4,994, 2001)
16. PI, COE Research Development Grant (\$5,000, 2002)
17. PI, Professional Development Grant (\$2,425, 2001)
18. PI, Professional Development Grant (\$2,125, 2000)
19. PI, Learning Productive Program Planning Grant: "Development of a Mixed Learning Scenario for Student Effective Learning." (\$7,021, 2001)
20. Summer Fellowship, COE Teaching Excellence Grant: "Development of a Comprehensive Robotic Kit for Engineering Education." (\$12,000, 2001)
21. PI, Professional Publications Grant (\$2,000, 2001)

#### **INDUSTRY SPONSORED RESEARCH PROJECTS**

1. "Tilt Table Control and Automation," *NASA Ames Research Center* (2010-2011).
2. "Catheter Automatic Assembly," *Boston Scientific Company* (2010-2011).
3. "Design of a Power-line Climbing Robot for Ice Removal," *JOBY Energy* (2009-2010).
4. "Automation of Reticle and Pellicle Moulder," *Seminet Automation* (2009-2010)
5. "Muscle Simulation Fixture," *San Francisco General Hospital* (2008-2009).
6. "PICC (Peripherally Inserted Central Catheter) Delivery System," *VasoNova* (2008-2009).
7. "Thermal Chamber Door Design," *Synaptics* (2008-2009).
8. "Catheter Wire Management," *Foxhollow Technology* (2006-2007).
9. "Cyterometer Test Tube Loader," *Stratedigm* (2006-2007).
10. "Design of High Speed Wafer Carrier for Wafer Transfer Robots," *Applied Materials* (2005-2006).
11. "Nano-Scale Precision Measurement Using Laser Interferometer," *Lockheed Martin Space Systems* (2005)
12. "Image-based Auto-Calibration of Wafer-Handling Robots," *Applied Materials* (2003-2004)
13. "A Delta Parallel Robot," *Delta-Tau* (2002-2003)
14. "Real-time Vehicle Attitude Control Using a Vision System," *Lockheed Martin Space Systems* (2001-2002)

#### **STUDENT SUCCESS**

I have mentored or directly supervised the following students to win various research competitions (ASME-American Society of Mechanical Engineers; SPDC-Student Professional Development Conference; CSU-California State University).

1. Shaun Densberger, 1st Place, Technical Poster Competition, ASME-SPDC, 2011

2. Michael Signorelli, 1st Place, Technical Webpage Design Competition, ASME-SPDC, 2011
3. James Martin, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2011
4. James Martin, Best Technical Content Award, ASME-SPDC, 2010
5. Hoang Nguyen, 1st Place, Technical Poster Competition, ASME-SPDC, 2010
6. Brendan O'Neill, 1st Place, Technical Poster Competition, ASME-SPDC, 2009
7. Eric Stackpole, Best Technical Content Award, ASME-SPDC, 2009
8. Anthony Cacace, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2008
9. Marion Hernandez, 1st Place, Technical Poster Competition, ASME-SPDC, 2008
10. Hanna Zeid, 1st Place, Technical Webpage Design Competition, ASME-SPDC, 2008
11. Anthony Cacace, Best Technical Content Award, ASME-SPDC, 2008
12. Patrick Landrum, 1st Place, Technical Poster Competition, ASME-SPDC, 2007
13. Ivan Cho, 1st Place, Technical Webpage Design Competition, ASME-SPDC, 2007
14. Harvey Wood, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2006
15. Leo Valmores, 1st Place, Technical Webpage Design Competition, ASME-SPDC, 2006
16. Jason Treadwell, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2005
17. Danny Ng, 1st Place, Technical Poster Competition, ASME-SPDC, 2005
18. Lorace Rimando, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2004
19. Nicholas Kendrick, 1st Place, Technical Poster Competition, ASME-SPDC, 2004
20. Daniel Wong, Best Technical Content Award, ASME-SPDC, 2004
21. Curt Von Badinski and Rich Mastropietro, 1st Place, CSU Research Competition, 2002
22. David Crum, 1st Place, Old Guard Oral Competition, ASME-SPDC, 2002
23. Christine Berg, 2nd Place, Technical Poster Competition, ASME-SPDC, 2011
24. Leonardy Tan, 2nd Place, Technical Webpage Design Competition, ASME-SPDC, 2010
25. Chirag Joshi, 2nd Place, Technical Poster Competition, ASME-SPDC, 2010
26. Joseph N. Pelina, 2nd Place, ASME Student Design Competition, 2009
27. Eric Stackpole, 2nd Place, Old Guard Oral Competition, ASME-SPDC, 2009
28. Lawrence Go, 2nd Place, Technical Poster Competition, ASME-SPDC, 2009
29. Tyler Grushkonitz, 2nd Place, Old Guard Oral Competition, ASME-SPDC, 2008
30. Daniel Wong, 2nd Place, Old Guard Oral Competition, ASME-SPDC, 2004
31. Lisa Faul, 2nd Place, Technical Poster Competition, ASME-SPDC, 2003
32. Andrea Rios, 3rd Place, Old Guard Oral Competition, ASME-SPDC, 2011
33. Will Hossner, Russ Shelton, Ruben Almeida, and Dan Boyd, 3rd Place, ASME Student Design Competition, 2010
34. Kim Eggert, 3rd Place, Old Guard Oral Competition, ASME-SPDC, 2009
35. Sukety Shah, 3rd Place, Technical Poster Competition, ASME-SPDC, 2004
36. Hai Quach, 3rd Place, Technical Poster Competition, ASME-SPDC, 2004
37. Leung, Kelvin, 3rd Place, Old Guard Oral Competition, ASME-SPDC, 2003
38. Brian Chu, 4th Place, Old Guard Oral Competition, ASME-SPDC, 2011
39. Tiffany Doria, 4th Place, Old Guard Oral Competition, ASME-SPDC, 2010
40. John Rendler, 4th Place, Old Guard Oral Competition, ASME-SPDC, 2002

41. Oscar Ayala, Paul Mantiply, and Brian Pham, 4th Place, ASME Student Design Competition, 2011
42. Jerry Kwan, 5th Place, Old Guard Oral Competition, ASME-SPDC, 2006
43. Mary Klenk, 5th Place, Old Guard Oral Competition, ASME-SPDC, 2005

## **SERVICE**

- SJSU Academic Senator (2008-Present)
- SJSU Curriculum and Research Committee (2010-2011)
- SJSU Accessible Technology Initiative Instructional Materials Committee (2010-2011)
- SJSU Organization Committee (2009-2010)
- SJSU Faculty-in-Residence for Accessible Instructional Materials (2008-2010)
- SJSU Professional Standard Committee (2008-2009)
- COE Graduate Studies Committee (2010-2011)
- Chair, COE Sabbatical Leave Committee (2008-2009)
- COE Student Affairs Committee (2006-2007)

## **PROFESSIONAL SERVICE**

- Nominating Committee, American Society of Mechanical Engineers (2010-2011)
- Johnson-Johnson Medal Award Committee, American Society of Mechanical Engineers (2004-2006)
- Conference Committee, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (2005)
- Ambassador, FIRST Robotics Competition (San José, 2005)
- Session Chair and Industry Tour Chair, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (2005)
- Chair, Santa Clara Valley Section, American Society of Mechanical Engineers (2003-2004)
- Secretary, Silicon Valley Engineering Council (2002-2003)
- Vice Chair, Santa Clara Valley Section, American Society of Mechanical Engineers (2002-2003)
- Session Co-Chair, 2001 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (2001)

## **AFFILIATIONS**

- American Society of Mechanical Engineers (ASME) (1997-Present)
- Institute of Electrical and Electronics Engineers (IEEE) (2001-2003, 2010)

## **AWARDS & HONORS**

- ASME District D Student Section Advisor Award (2011)
- ASME Fellow (2010)
- ASME District D Student Section Advisor Award (2007)
- Richard A. Fitz Outstanding Faculty Advisor Award (2005)
- 2004 ASME Diversity & Outreach Award (2004)