

## **Brett R. Nadler**

University of California San Diego  
Jacobs School of Engineering  
Department of Mechanical and Aerospace Engineering  
Room 1803, EBU I  
La Jolla, CA 92093  
858.822.3391  
bnadler (at) ucsd (dot) edu

### **CURRENT POSITION**

Graduate Research Assistant, University of California San Diego, 2006-present.

Research Areas: Dynamical systems with linear/non-linear control, optical devices, MEMS control, sensor fusion, mobile robotic systems, computer vision, adaptive and hybrid metrology

### **PRIOR EMPLOYMENT**

Technical Staff Member, Los Alamos National Laboratory. Los Alamos, NM, 2002-2006.

Research Areas: metrology in hostile environments, structural health monitoring, ultrasonic and lamb wave propagation, shock measurements, high explosives telemetry, wireless sensor networks, Hilbert-Huang transform applications

### **EDUCATION**

PhD *in progress*, University of California San Diego, Mechanical Engineering, 2006-present.

Research in the Flow Control and Coordinated Robotics Lab under Professor Thomas Bewley consists of computer vision development with object identification and coordinated robotic movement. Work in the Photonics Systems Integration Lab under Professor Joseph Ford involves creating a hybrid optical and visual ranging module for robotic sensing.

MEng., Cornell University, Mechanical Engineering, 2002.

Focus was in robotic control and design including system integration for teams of soccer playing robots in the Robocup Lab under Professor Raffaello D'Andrea.

B.S., Cornell University, Mechanical Engineering, 2001.

Certification, Cornell University, Systems Engineering , 2002.

## **AWARDS AND SPEAKING ENGAGEMENTS**

LANS Mechanical and Aerospace Engineering Fellowship, 2006-2008.  
Los Alamos Spot Award, Flight test preparation, 2005  
Los Alamos Spot Award, Community outreach with University of California, San Diego. 2005.  
Defense Programs Award of Excellence (DOE), Sensing Systems Analyst, 2004  
Distinguished Performance Award (DOE), Sensing Systems Analyst, 2004  
Robocup World Champions, F180 League, Project Lead. Fukuoka, Japan. 2002.  
Robocup Third Place Winners, F180 League, Project Lead. Seattle, USA. 2001.  
Plenary Speaker, *TechChallenge 2001*, The Tech Museum, San Jose, USA. 2001.  
NASA Space Grant, *Real-Time Control of Autonomous Vehicles*. 2001.  
Robocup World Champions, F180 League, Mechanical Systems. Melbourne, Australia. 2000.  
California State University, Sacramento, Mechanical Engineering Merit Scholarship. 1998.  
Air Force Merit Scholarship. 1996.  
Rio Americano High School Valedictorian, Sacramento. 1996.

[Non-academic] PumpkinMan II Triathlon 3<sup>rd</sup> Place, 25-29 age group, Las Vegas. 2005.

## **TEACHING EXPERIENCE**

Mentor, Dynamics Summer School, Los Alamos National Laboratory, Summer 2005  
Mentor, Embedded Wireless Sensing, Los Alamos National Laboratory, 2003  
Teaching Assistant, Feedback Control Systems (Graduate course), Cornell University. Fall 2001.  
Teaching Assistant, System Dynamics, Cornell University. Spring 2001.  
Teaching Assistant, Learning Resources Center. American River College, Summer 1998.

## **CURRENT COLLABORATIONS**

Optical fiber-based gap sensing, Lambda Inc., Blacksburg, VA.  
Fiber optic uncertainty in shock measurements, Kansas City Plant.  
Wireless sensing networks, Kansas City Plant.  
Fiber optic uncertainty in shock measurements, University of Missouri-Rolla.  
Magneto-optical sensor technology, Lawrence Livermore National Laboratory.  
Damage identification in composite plates, University of California San Diego.

## **PUBLICATIONS**

### **REFEREED ARTICLES**

[8] B.R. Nadler, J. Greene. High G Effects on Optical Fiber Based Displacement Sensing for Reentry Bodies. In *Proc. Optics and Photonics 2006*, San Diego, California, 2006.

[7] M. Gonzales, G. Graf, R. Cooper, B. Nadler, T. Claytor, and T. Tippetts. Ultrasonic Assessment and Model Validation of Damage in Carbon-fiber Based Composites. In *Proc. International Modal Analysis Conference*, St. Louis, MO, 2006.

- [6] G. Park, A. Rutherford, J. Wait, B. Nadler, C. Farrar, and T. Claytor. Higher Frequency Response Functions for Composite Plate Monitoring with Ultrasonic Validation. *AIAA Journal*, Vol. 43, No. 11, November 2005, 2431-2437.
- [5] C. Farrar, G. Park, J. Wait, B. Nadler, H. Sohn, and D. Allen. Damage Prognosis Solutions, Part I: Overview. In *Proc. Sixth European Conference on Structural Dynamics*, Paris, France, 2005.
- [4] G. Park, A.C. Rutherford, J.R. Wait, B.R. Nadler, and C.R. Farrar. The Use of Frequency Response Functions for Composite Plate Monitoring with Ultrasonic Validations. In *Proc. ASME International Mechanical Engineering Congress*, Anaheim, California, 2004.
- [3] C.R. Farrar, G. Park, F.M. Hemez, T.B. Tippetts, H. Sohn, J.R. Wait, D.W. Allen, B.R. Nadler. Damage Detection and Prediction for Composite Plates. *The Member Journal of The Minerals, Metals & Materials Society*, 2004.
- [2] J.P. Lynch, K.H. Law, A.S. Kiremidjian, E. Carryer, C.R. Farrar, H. Sohn, D.W. Allen, B. Nadler, and J.R. Wait. Design and Performance Validation of a Wireless Sensing Unit for Structural Monitoring Applications. *International Journal of Structural Engineering and Mechanics*, 17(3-4): 393-408, 2004.
- [1] J.P. Lynch, K.H. Law, A.S. Kiremidjian, E. Carryer, C.R. Farrar, H. Sohn, D. Allen, B. Nadler, and J. Wait. Laboratory and Field Validation of a Wireless Sensing Unit Design for Structural Monitoring. In *Proc. US-Korea Workshop on Smart Structural Systems*, Pusan, Korea, 2002.

#### NON-REFEREED ARTICLES AND TECHNICAL REPORTS

- [3] H. Sohn, C.R. Farrar, F.M. Hemez, D.D. Shunk, D.W. Stinemat, and B.R. Nadler. A Review of Structural Health Monitoring Literature: 1996-2001. Los Alamos National Laboratory Report LA-13976-MS, 2004.
- [2] B.R. Nadler, O. Purwin, and T. Chung. Robocup 2001: Mechanical Design. Cornell University Master's of Engineering Paper, 2001.
- [1] B.R. Nadler, T. Tabshouri, and T.S. Plummer. CS Drainage Studio User's Guide. Civil Solutions Inc. Software manual, Sacramento, California, 1999.

#### UNPUBLISHED AND PROFESSIONAL PRESENTATIONS

- [11] C. Schmidt-Wetekam, B.R. Nadler. Design, Integrated Sensing, and Control of an Autonomous and Reconfigurable Hopping Robot. Presented at the 26<sup>th</sup> Annual UCSD Jacobs School of Engineering Research Expo, San Diego, California, 2007.

[10] B.R. Nadler, J.P. Sandoval, T.L. Petersen, and F.A. Vigil. Uncertainty Quantification for Fiber Optic Time-of-Arrival Sensors in High Explosives. Presented at the *6th Biennial Tri-Laboratory Engineering Conference*, Monterey, California, 2005.

[9] B.R. Nadler, J.R. Wait, T.N. Claytor, H. Sohn, and C.R. Farrar. Effectiveness of Lamb Wave Propagation in Composite Plate Monitoring with Ultrasonic Validation. Presented at the *International Modal Analysis Conference*, Orlando, Florida, 2005.

[8] B.R. Nadler, J. Greene, and C. Paye. Optical Fiber-Based Gap Sensing for High Explosives. *JOWOG 31 at Sandia National Laboratory*, Albuquerque, NM, 2004.

[7] B.R. Nadler, J. Sandoval, T. Petersen, J. Beatty, and P. Klingsporn. Uncertainty Quantification for Fiber Optic Pressure Sensors in High Explosive Shock Measurements. Presented at the *Second Annual Sensors Workshop*, Lawrence Livermore National Laboratory, Livermore, CA, 2004.

[6] B.R. Nadler, J. Greene, and C. Paye. Optical Fiber-Based Displacement Sensing With High Explosives. Presented at the *Second Annual Sensors Workshop*, Lawrence Livermore National Laboratory, Livermore, CA, 2004.

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[5] J.R. Wait, N.P. Limback, G. Park, H. Sohn, C.R. Farrar. Monitoring of Welded Joints using Piezoelectric Active Sensing Techniques. Presented at the *SPIE International Symposia Smart Structures & Materials/NDE*, San Diego, CA, 2004.

[4] B.R. Nadler and C.R. Farrar. Non-Destructive Evaluations using Piezoelectric Sensor Technology. Presented at the *First Annual Sensors Workshop*, Lawrence Livermore National Laboratory, Livermore, CA, 2003.

[3] B.R. Nadler, J. Goethals, C.R. Farrar. Non-Destructive Evaluations using Wireless Sensing Technology. Presented at the *First Annual Sensors Workshop*, Lawrence Livermore National Laboratory, Livermore, CA, 2003.

[2] M. Babish, B. Nadler, W. Stokes, M. Huang, G. Dominguez, G. Myers, C. Siagian, and W. Effendi. Robocup - Robotic World Cup Soccer. Presented at *Bits On Our Mind (Boom): A Technology Odyssey*, Cornell University, NY, 2001.

[1] S. Saeed, A. Heifets, J. Pollak, and N. Schlegel. Robocup. Presented at *Bits On Our Mind (Boom)*, Cornell University, NY, 2000.

## **AFFILIATIONS**

Member, American Society of Mechanical Engineers (ASME)

Member, The International Society for Optical Engineering (SPIE)

Member, Institute of Electrical and Electronics Engineers (IEEE)