

Nathan J. Delson

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INTERESTS Mechanical Design, Mechatronics, Robotics, Biomedical Devices, and Design Education.

EDUCATION

- 6/90-5/94 **Ph.D. in Mechanical Engineering**, Massachusetts Institute of Technology. Minor in Biomechanics. Thesis: "Robot Programming by Human Demonstration".
- 9/88 - 6/90 **Master of Science**, Massachusetts Institute of Technology. Thesis: "Design of Bracing End-Effectors for Dynamic Advantage with Application to Robotic Grinding".
- 9/81-6/86 **Bachelor of Science in Mechanical Engineering**
University of California at San Diego. Cum Laude.

ACADEMICS

- 1/08 – present **Teaching Professor and Director of the Mechanical Engineering Design Center**
Dept. of Mechanical and Aerospace Engineering, UC San Diego.
- 7/99 – 12/07 **Academic Coord. and Director of the Mechanical Engineering Design Center**
Dept. of Mechanical and Aerospace Engineering, UC San Diego.
- 7/96 - 6/99 **Director of the Mechanical Engineering Design Studio**, Yale University Dept. of Mechanical Engineering.
- 7/95 – 6/99 **Lecturer**, Yale University, Dept. of Mechanical Engineering. Instruct design courses, and supervise senior and master level projects.

INDUSTRY

- 1994 – present **Consultant**: Design Continuum, Sixense, Drivecam, and others.
- 6/96 – 1/08 **Co-founder of Coactive Drive Corporation**. Design of electromechanical actuator that was patented and licensed in the industry.
- 7/93 - 8/93 **Visiting Engineer**, Daikin Industries, LTD. Osaka, Japan.
- 6/92 - 6/94 **Co-founder of Sensor Lab Partnership** that developed a science education kit for hands-on physics and biomechanics educational experiments.
- 7/86 - 6/88 **Associate Structural Analysis Engineer**, United Technologies, Advanced Systems Division, San Diego CA. Structural analysis and design for manufacturability.

AWARDS

- 2015 **Outstanding Technical Paper**, Engineering Design Graphics Division ASEE
- 2014 **Outstanding Teaching Award**, Warren College UC San Diego
- 2009-10 **Best Teaching Award**, MAE Dept., Jacob School of Engineering Dean's Office
- 2005 **Best Paper Finalist**, 12th International Conference on Advanced Robotics
- 1999 **Collegiate Inventors Competition Winner of Two Adviser Awards**, National Inventors Hall of Fame.

SELECTED PUBLICATIONS AND PATENTS

- Houston J., and Delson N., "Synchronized Vibration Device For Haptic Feedback," U.S. Patent No. 8,384,316, issued Feb 26, 2013
- Delson, N., and Anderson M., "Optimization from a Working Baseline: A Design Education Approach," 2012 ASEE Annual Conference, San Antonio, Texas, USA on June 10 - 13, 2012
- Delson, N., "RateMyTeammate.org: A Proposal for an Online Tool for Team Building and Assessment", 2012 ASEE Annual Conference, San Antonio, Texas, USA on June 10 - 13, 2012
- Delson, N; Sloan, C; McGee, T; Kedarisetty, S; Yim, W; Hastings, RH., "Parametrically Adjustable Intubation Mannequin With Real-Time Visual Feedback," *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare* 7(3):183-191, June 2012.
- Shea D. Aiken, MD, Nathan Delson, PhD, Terence M. Davidson, MD, and Randolph H. Hastings MD., "A Two-Dimensional Model of Anatomic Relationships during Laryngoscopy," *Anesthesia and Analgesia* 105: 1118-1126, October 2007.
- Delson, N., "Dynamic Legged Robot," US Patent No. 7,168,513, Issued 1/30/2007.
- Delson, N., Hanak, T., Loewke K., and Miller, D., "Modeling and Implementation of McKibben Actuators for a Hopping Robot," 12th International Conference on Advanced Robotics, Seattle, Washington, USA on July 18-20, 2005
- Delson, N., 2004, "Creating a Positive Introductory Design Experience" *Education that Works: The NCHIA 8th Annual Meeting*, March 18-20, San Jose CA, 2004, pp. 59-65
- Delson, N., Koussa N., and Tejani N., 2003, "Measuring 3D Force and Motion Trajectories of a Laryngoscope in the Operating Room" *Journal of Clinical Engineering*, October/December 2003, pp. 211-217.
- Delson, N., Koussa N., Hastings R. H., and Weinger M. B. . "Quantifying Expert vs. Novice Skill In Vivo for Development of a Laryngoscopy Simulator. *Medicine Meets Virtual Reality 11*, NextMed: Health Horizion, IOS Press, 2003, pp. 45-51
- Delson, N. and Houston J. 1999, "Actuator with Opposing Repulsive Magnetic Forces" US Patent No. 6002184, Issued Dec. 4 1999
- Panjabi, M., Wang, E., and Delson, N., 1999. "Neck Injury Criteria Based on Intervertebral Motions and its Evaluation using an Instrumented Neck Dummy" presented at *Conference of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Barcelona, Spain September 23 - 24, 1999
- Delson, N. 1999. "Selecting Capstone Engineering Design Projects for High Team Motivation" presented at *Conference on Designing Design Education for the 21st Century* Claremont, California, 19-21 May 1999
- Delson, N., and West, H. 1996. "Segmentation of Task Into Subtasks for Robot Programming by Human Demonstration." *Japan-USA Symposium on Flexible Automation*. Boston, July 7-10 1996, pp. 41-47.
- Delson N., and West H., 1994. "Robot Programming by Human Demonstration: The Use of Human Variation in Identifying Obstacle Free Trajectories." *IEEE International Conference on Robotics and Automation*, San Diego, CA , May 8-13 1994, pp. 564-571.
- Delson N., and West H., 1993. "Bracing to Increase the Natural Frequency of a Manipulator: Analysis and Design." *International Journal of Robotics Research*, Vol. 12, No. 6, Dec. 1993, pp. 560-571.