

# ATTILA PRIPLATA, PH.D.

5 PATRICK STREET  
ARLINGTON, MA 02474  
617.642.9459  
ATTILA.PRIPLATA@GMAIL.COM

## Profile

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Innovative R&D scientist/engineer with deep experience in medical technology development and commercialization. Proven, successful track record of science and technology exploration and intellectual property generation. Strong electrical and electromechanical device design expertise with particular specialization in pre-clinical testing, clinical testing and statistical evaluation. Regulatory experience including IDE development & FDA submission for Class III implantable medical devices.

## Experience

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**Boston Retinal Implant Project, MIT and Boston VA Research Institute,** 2010-present  
Boston, MA

### Project Manager and Engineer

- Managed, designed and built prototype computer vision system for front-end controller for a retinal implant as well as coinvented standalone adaptive “smart glasses” system for blind individuals. Designed and developed demonstration vibrotactile and audio alert system for navigational functionality as well as gathered clinician feedback. Programmed software modules for object, facial and character recognition. Created UI that utilized the OpenCV toolbox and speech synthesis API. Built and tested range finding system using ultrasound. Managed two engineers.
- Created and managed the electronic Quality Management System. Authored design control documents from product specification to risk assessment
- Developed debug module and beta test software for the application specific integrated circuit (ASIC) that is under development at BRIP for the retinal prosthesis and coauthored the ASIC product specification document
- Managed ASIC project schedule and resource that lead to a successful tapeout of the chip
- Coauthored and awarded a one year \$52,000 grant to study the development of a standalone “smart glasses” system to aid blind children through activities of daily living
- Prepared and submitted a three year Career Development Award to the VA for \$600,000 to design the external controller for the BRIP’s retinal prosthesis (awaiting approval)

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**ENDOCORE LLC, Morris Plains, NJ** 2009-2010

### Research and Development Director

- Invented and drove development of lead technologies, including an endoscopic-based device for the treatment of Type II diabetes and morbid obesity
- Led pre-clinical (animal) studies and verification activities. Developed the protocols, managed the studies, and participated in iteration of device design based on observed results
- Served as the quality system officer for the design phase of product. Developed and maintained the SOPs for the quality system under ISO 13485:2003 standards
- Defined, negotiated, and managed product-development programs with OEM partners and contractors
- Participated in regulatory and market strategy for a Class III medical device

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**STRYKER DEVELOPMENT, Cambridge, MA** 2007-2008

### Senior Project Engineer

- Led design and development through feasibility phase of three neurostimulation devices in the areas of low back pain, hypertension and pressure ulcers
- Managed endoscopic device design, development, and in-vivo testing of an implantable mechanical device for the treatment of obesity. Conducted monthly animal pilot studies and analyzed data. Managed design firm in developing the endoscopic delivery system
- Participated in preparation and submission of a pre-IDE packet to FDA for Class III medical device and attended FDA meeting
- Designed and conducted several animal and human studies with 12 patients under IACUC and IRB approval. Coordinated contracts with principal investigators and contract research organizations
- Managed \$100K+ project budgets and maintained feasibility binders for quality control
- Evaluated numerous emerging technologies for acquisition

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**MEDTRODE INC., New London, ON, Canada** 2007

### Consultant

- Aided in the research of an implantable neurostimulation device for the treatment of memory loss
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**HARVARD MEDICAL SCHOOL**, Boston, MA

2005-2007

**Research Fellow in Medicine**

- Designed and developed hardware and software for vibrating therapeutic footwear to study effects of mechanical noise on dynamic postural control. Demonstrated improved gait in elderly individuals at risk of falls
- Collaborated in research with start-up company, Afferent Corporation, to facilitate commercializing technology
- Founded and managed a motion analysis laboratory directing two engineers and developed several IRB approved protocols
- Wrote analytical software to analyze physiological time series in terms of fractal dimensions, fractional Brownian motion, and measures of complexity

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**AFFERENT CORPORATION**, Providence, RI

Summer 2005

**Visiting Scientist**

- Assisted in the research of vibrating insoles to enhance balance control
- Developed protocols for clinical testing of vibrating insoles
- Designed software to analyze postural sway displacement data for high throughput

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**BOSTON UNIVERSITY**, Boston, MA

2000-2005

**Graduate Research Assistant**

- Demonstrated the functionality of applying mechanical noise to the soles of the feet and to ankle tendons in order to improve neuromotor function of patients with somatosensory deficits
- Designed and assembled the hardware and software of prototype vibrating insoles and ankle wraps
- Provided critical contributions to a start-up medical device company (Afferent Corporation) by conducting research and development for two NIH SBIR Phase I and two NIH SBIR Phase II grants

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**BOSTON UNIVERSITY**, Boston, MA

1999-2000

**Research Assistant**

- Developed an artificial vestibular system (neurostimulation device) to enhance human balance control

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**Education**

Boston University	Ph.D., Biomedical Engineering	May 2005
Boston University	B.S., Biomedical Engineering	May 2000

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**Selected Publications**

**Patents Pending**

Systems and Methods for Treatment of Obesity and Type 2 Diabetes (*7 patent applications*) 20110000496; 20110004xxx (xxx = 146, 288, 229, 234, 236, 320)

Method and Apparatus for Improving Human Balance and Gait and Preventing Foot Injury 20040173220

**Peer-reviewed Publications**

Kang HG, Costa MD, Priplata AA, Starobinets OV, Goldberger AL, Peng CK, Kiely DK, Cupples LA, Lipsitz LA. Frailty and the degradation of complex balance dynamics during a dual-task protocol. *The Journals of Gerontology: Series A* 2009;64:1304-1311.

Galica AM, Kang HG, Priplata AA, D'Andrea SE, Starobinets OV, Sorond FA, Cupples LA, Lipsitz LA. Subsensory vibrations to the feet reduce gait variability in elderly fallers. *Gait & Posture* 2009;30:383-387.

Costa M, Priplata AA, Lipsitz LA, Wu Z, Huang NE, Goldberger AL, Peng CK. Noise and poise: enhancement of postural complexity in the elderly with a stochastic resonance-based therapy. *Europhysics Letters* 2007;77:68008.

Priplata AA, Prittiti BL, Niemi JB, Hughes R, Gravelle DC, Lipsitz LA, Veves A, Stein J, Bonato P, Collins JJ. Noise-enhanced balance control in patients with diabetes and patients with stroke. *Annals of Neurology* 2006;59:4-12.

Priplata AA, Niemi JB, Harry JD, Lipsitz LA, Collins JJ. Enhancing elderly balance control with vibrating insoles. *Lancet* 2003;362:1123-1124.

Priplata A, Niemi J, Salen M, Harry J, Lipsitz LA, Collins JJ. Noise-enhanced human balance control. *Physical Review Letters* 2002;89:238101.

**Abstract/Presentations**

Kelly SK, Eilersick WF, Doyle WP, Priplata AA, et al. "Current Driver Circuits and Safety Features for a Retinal Prosthesis." The Association of for Research in Vision and Ophthalmology, Fort Lauderdale, FL, May 2011.

Kelly SK, Doyle WP, Priplata AA, et al., "Optimal Primary Coil Size for Wireless Power Telemetry to Medical Implants." IEEE ISABEL International Symposium on Applied Sciences in Biomedical and Communication Tech, [Invited Paper] November 2010.

Kang HG, Galica AM, Priplata AA, et al., "Gait Variability is Reduced by Sub-Threshold Vibrations to the Feet," 2008 North American Congress on Biomechanics, August 2008.

Priplata AA, et al. "Enhancing Human Balance Control by Applying Random Vibrations to the Ankle Tendons," American College of Sports Medicine 53<sup>rd</sup> Annual Meeting, Denver, CO, June 2006.

Priplata AA, et al. "Noise-enhanced balance control: the worse you are the better you get," 20<sup>th</sup> Congress of the International Society of Biomechanics, Cleveland, OH, August 2005.

## Skills

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### Professional and Laboratory

Computer Vision, Project Planning/Management Course (Boston University Corporate Education Center), Analog and Digital Circuit Design, Mechanical Design, Electromechanical Design, Microprocessor, Data Acquisition, Analog and Digital Signal Processing, Bench-top testing, Human Subject Testing, Psychophysical Experimentation, Neurophysiology, Nonlinear Dynamical Systems, Biostatistics

### Computer

C++, OpenCV, Verilog, Matlab, Perl, LabVIEW, Fortran, JAVA, Java Native Interface, Unix, Linux, Android SDK, JMP, SPSS, Statistica, STATA, SigmaPlot, OrCAD, SolidWorks, Microsoft Project, Latex, Adobe Illustrator and Photoshop

## Affiliations

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The Association for Research in Vision and Ophthalmology (2011-present), IEEE Engineering in Medicine and Biology (2007-2010); Biomedical Engineering Society (2007-2010); Gerontological Society of America (2005-2007), *Co-chair of Student Awards Committee*; Boston University Student Association of Graduate Engineers (2000-2005), *President*; Boston University Biomedical Engineering Society (1996-2000), *President*

## Awards

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NIH National Research Award (T32), *BIDMC/Harvard Translational Research in Aging Program* (2005-2007); John V. Basajian Student Investigator Award, *Congress of the International Society of Electrophysiology and Kinesiology* (2004); Provost's Award, *Boston University's Science and Technology Day* (2003); MIT's TR100 Award (nominated), *Technology Review Magazine's Top 100 Young Innovators* (2003); Adam M. Miller Memorial Award for leadership and service, *Boston University, Department of Biomedical Engineering* (2000)