

José Oscar Mur-Miranda

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Objective Full-time position, part-time position or independent projects in electrical engineering and related fields. Research and development, academic, or industrial environments desired.

Education **Massachusetts Institute of Technology** Cambridge, MA
Doctor of Philosophy degree in Electrical Engineering and Computer Science, February 2004. Doctoral dissertation: "Electrostatic Vibration-to-Electric Energy Conversion." Specialized in energy harvesting and microelectromechanical systems (MEMS). Thesis included theoretical framework, system design, fabrication experience, and electronics experiments. GPA 5.0/5.0

Master of Engineering degree in Electrical Engineering and Computer Science, February 1998. Master dissertation: "Feasibility of Electrostatic Bearings for Micro Turbine Machinery." Specialized in systems control and nonlinear circuit analysis. National Science Foundation Fellow, 1996-1999. GPA 5.0/5.0

Bachelor of Science degree in Electrical Engineering, May 1995. Advanced undergraduate project: "A Linearization Technique for the Analysis of the Lorenz System." Concentrated on circuit analysis, system theory, and electronics. Other courses include thermodynamics and quantum physics. GPA 4.8/5.0

Honorable mention in the National Defense Science and Engineering Graduate Fellowship Program. Chairman and co-founder of the MIT chapter of the IEEE, 1994-1995. Member, Sigma Xi (Scientific Research Society, membership by invitation only), Tau Beta Pi (Engineering Honor Society), Eta Kappa Nu (Electrical Engineering Honor Society). Commendation letters in Communication, Control and Signal Processing; Acoustics; Computation Structures; and Probabilistic Systems Analysis.

University of Puerto Rico at Mayagüez Mayagüez, PR
Courses include: Communications, Digital Systems Design, and Power Systems Analysis. GPA 4.0/4.0

Experience **Inter American University of Puerto Rico, Bayamón Campus** Bayamón, PR
August 2004 - present
Taught Electric Circuits I and II classes for Electrical Engineering majors as an Associate Professor in the Department of Electrical Engineering. Initiated the process of setting up an academic research laboratory for energy harvesting.

Centre Nacional de Microelectrónica Barcelona, Spain
March 2004 - July 2004
Worked as a consultant for the creation of an energy scavenging research group using the center's low-power electronics and MEMS expertise.

Department of Electrical Engineering and Computer Science at MIT Cambridge, MA
January - May 1995, August 1997 - December 1997, January - May 2000, September - December 2001, January - May, August - December 2002
Worked as Graduate Instructor and Teacher Assistant in the Communications, Control and Signal Processing class (6.011) and in the Circuits and Electronics class (6.002) for Electrical Engineering and Computer Science majors.

Engineering Services for Industry, Inc. Río Piedras, PR
November 1995 - July 1996, July - August 1997
Designed and implemented industrial process control and automation systems. Responsibilities included: process control design (Process & Instrumentation Drawings), instrumentation, programming and construction of equipment and computers, and installation and start-up at sites.

Bose Corporation

Framingham, MA

May - August 1995

Created a quantitative scale to measure acoustic port performance and applied it to find the optimal speaker port. Study included lumped parameter and wave analysis, steady-state alternating fluid dynamics, turbulence and noise, and cost and manufacturing issues.

Merck, Sharp & Dohme Química, Arecibo

Arecibo, PR

June - July 1992, January - June 1993

Designed a bar coding system, performed Instrument Qualification and Systems Integration and Validation of an automated manufacturing plant under construction.

Qualifications Licensed for the practice of Engineering in the Commonwealth of Puerto Rico (Professional Engineer license 16087). Hands-on training and experience in MEMS design, fabrication process creation, and clean room technology including DRIE and acid etches. Experience in the construction and design of analog and digital electrical circuits, both in laboratory and industrial sites. Experience in start-ups at industrial sites. Competence in various programming languages and operating systems. Fully bilingual (English/Spanish). Extensive tutoring and teamwork experience. Technical and essay writing expertise. Letters of reference available upon request.

References Jeffrey H. Lang, Professor of Electrical Engineering and Computer Science, and Associate Director of the Laboratory for Electromagnetic and Electronic Systems at MIT. E-mail: lang@mit.edu. Telephone: 1(617)253-4687.

Edwin Ortega, President of Engineering Services for Industry, Inc. E-mail: ortegae@wns.net. Telephone: 1(787)466-4595.

Publications Meninger, S.; Mur-Miranda, J.O.; Amirtharajah, R.; Chandrakasan, A.P.; Lang, J.H., "Vibration-to-electric energy conversion", *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, Volume 9, Issue 1, 2001 February, Pages 64-76.

Amirtharajah, R.; Meninger, S.; Mur-Miranda, J.O.; Chandrakasan, A.P.; Lang, J.H., "A micropower programmable DSP powered using a MEMS-based vibration-to-electric energy converter", *Digest of Technical Papers - IEEE International Solid-State Circuits Conference*, 2000, Pages 362-363, 469.

Meninger, S.; Mur-Miranda, J.O.; Amirtharajah, R.; Chandrakasan, A.P.; Lang, J.H., "Vibration-to-electric energy conversion", *Proceedings of the International Symposium on Low Power Electronics and Design, Digest of Technical Papers*, 1999, Pages 48-53.

A.H. Epstein, S.D. Senturia, G. Anathasuresh, A. Ayon, K. Breuer, K-S. Chen, F.F. Ehrich, G. Gauba, R. Ghodssi, C. Groshenry, S.A. Jacobson, J.H. Lang, C-C. Lin, A. Mehra, J.O. Mur-Miranda, S. Nagle, D.J. Orr, E. Piekos, M.A. Schmidt, G. Shirley, S.M. Spearing, C.S. Tan, Y-S. Tzeng and I.A. Waitz, "Power MEMS and Microengines," *Proceedings of the 1997 International Conference on Solid-State Sensors and Actuators*, Chicago, IL, pp. 753-756, June 16-19, 1997.

A.H. Epstein, S.D. Senturia, O. Al-Midani, G. Anathasuresh, A. Ayon, K. Breuer, K-S Chen, F.F. Ehrich, E. Esteve, L. Frechette, G. Gauba, R. Ghodssi, G. Groshenry, S.A. Jacobson, J.L. Kerrebrock, J.H. Lang, C-C Lin, A. London, J. Lopata, A. Mehra, J.O. Mur-Miranda, S. Nagle, D.J. Orr, E. Piekos, M.A. Schmidt, G. Shirley, S.M. Spearing, C.S. Tan, Y-S Tzeng, I.A. Waitz, "Micro-Heat Engines, Gas Turbines, and Rocket Engines," *AIAA 97-1773, presented at the 28th AIAA Fluid Dynamics Conference and the 4th AIAA Shear Flow Control Conference*, Snowmass Village, June 1997.

Research Impact

Meninger and I wrote the paper on *Transactions on VLSI Systems* and *ISLPED 1999*. Meninger is an expert in Very-Low-Power electronics and designed a controller for his Master's thesis, *A Low Power Controller for a MEMS Based Energy Converter*. The underlying theory, the converter design and the power electronics are included in my doctoral thesis, *Electrostatic Vibration-to-Electric Energy Conversion*. Our work has been cited in several papers since it is the first published design of an electrostatic vibration-to-electric energy converter. Other papers have implemented our design or used our theoretical analysis.