SOLOMON DAVIS

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New East Dorms Blg. 453 Apt. 16 Technion City, Haifa 3200003

EDUCATION

PhD Technion – Israel Institute of Technology, Expected June 2019
Mechanical Engineering
Dissertation: "Limit Cycles, Mode Selection and Resonant Excitation via Spatial and Temporal Selective Transformations"

MS University of Washington 2010-2013
Mechanical Engineering
Thesis: "Control of Micro Cantilevers Using a Stand-alone FPGA-Processor Platform"
Advisor: Joseph Garbini

BS University of Oregon, 2006-2010
Mathematics

HONORS, AWARDS AND SCHOLARSHIPS

Dean's List, University of Oregon 2010

Dean's List, University of Oregon 2009

Lady Davis Scholarship, Technion 2015-2016
(~$5000)

Robert Weissman Doctoral Fellowship, Technion 2015-2016
(~$10000)

Robert Weissman Doctoral Fellowship, Technion 2016-2017
(~$10000)

Award for Academic Excellence, Technion 2018
(~$250)

RESEARCH EXPERIENCE

Limit Cycles, Mode Selection and Resonant Excitation via Spatial and Temporal Selective Transformations
Technion - Israel Institute of Technology 2015-2019

Advisor: Professor Izhak Bucher

- Deriving an analytical model of acoustic speakers
- Using the model to determine how to excite various vibration mode combinations in resonance
- Simulating excitation algorithms with the model
- Designing and implementing a high-speed control loop
- FPGA programming
- Verifying the designed performance modal control scheme in experiment

Seattle Safety, Kent, Washington, USA 2013-2015
Position, Control Systems and R&D Engineer

- Writing and testing real-time control algorithms for crash test simulators
- Developing user-end software in LabVIEW
- Troubleshooting electrical, mechanical and hydraulic problems of newly built systems

University of Washington, Seattle Washington, USA 2010-2013
Position

- Developing a control algorithm for a micro cantilever for Magnetic Resonance Force Microscopy
- Programming the control algorithm on a FPGA controller board
- Implementing control algorithms on the FPGA controller board to replace a lock-in amplifier and function generator.

TEACHING EXPERIENCE

Technion – Israel Institute of Technology, Haifa Israel April 2016- April 2019
Teaching Assistant, Mechanical Engineering

- Microprocessor Product Based Design

PUBLICATIONS

Journal Papers Accepted

Picone, R., **Davis, S.**, Devine, C., Garbini, J. and Sidles, J., "Instrumentation and control of harmonic oscillators via a single-board microprocessor-FPGA device," *Review of Scientific Instruments* vol. 88. no. 4, 2017

Davis, S., Bucher, I., "Automatic vibration mode selection and excitation; combining modal filtering with autoresonance," *Mechanical Systems and Signal Processing*, vol. 101, 140-155, 3 August 2017

Davis, S., Gabai, R. and Bucher, I., "Realization of an Automatic, Contactless, Acoustic Levitation Motor via Degenerate Mode Excitation and Autoresonance," Submitted to: *Sensors and Actuator A: Physical*, vol. 276, 34-42, 17 March 2018

Journal Papers in Review

Gabai, R., Shaham, R., **Davis, S.**, Coehn, S. and Bucher, I., "A contactless stage based on near field acoustic levitation for wafer handling and positioning – concept, design, modeling and experiments," Submitted to: *IEEE Transactions on Mechatronics*, November 2017

Davis, S., Tresser, S., Ariel, N., Ferdinskoif, A., Bucher, I., "In situ identification of natural frequency branches in gyroscopic systems via Autoresonance and Phase Locked Loop", Submitted to: *ASME Journal of Vibration and Acoustics*, Novenmber 2018

Conference Papers

(Abstract-Reviewed)

Davis, S. and Bucher, I. "A Contactless Acoustic Levitation Motor vis Autoresonance and Modal Excitation," International Conference on Engineering Vibration, Sofia, Bulgaria, Sep. 4-7, 2017

PROFESSIONAL EXPERIENCE

Seattle Safety: Kent, Washington, USA, http://www.seattlesafety.com/ 2013-2015
Position: Mechanical/Controls/Digital Signal Processing Engineer
Tasks

- Develop Control Systems for Automotive Crash Test Simulators
- Develop real time control of high-speed hydraulic and pneumatic machinery
- Program control algorithms in LabVIEW
- Troubleshoot mechanical, electrical, hydraulic pneumatic machinery

LANGUAGES

English: Native Language

Hebrew: Novice Speaker, Advanced Reading and Writing

COMPUTER SKILLS

Programming: C, Simulink, LabVIEW