Daniel Y. Abramovitch, Ph.D.
Home Office/Fax: (650) 856-2364
Web: dabramovitch.com ; Email: abramovitch@stanfordalumni.org

Objective: A senior engineering/technical lead position in industrial research.

Summary of Qualifications

- **Twenty six years industrial research experience**. Proven ability to contribute to multiple phases of research projects, from physical measurements and mathematical modeling, signal processing and algorithm design, to market analysis for new technologies. Track record of identifying technological trends, past, present, and future. A prolific inventor with multiple patents.
- **Expertise in control and signal processing:** servo control of precision mechatronics, including storage and instrumentation systems. Adaptive filtering and control, nonlinear systems, phase-locked loops, demodulation & synchronization, optimal control and estimation, PID controllers, measurements, instrumentation, measurement automation, real-time systems, and signal post-processing. Expertise in implementing algorithms to minimize latency in real time systems.
- **Skilled in real time computation, minimum latency algorithms, and sophisticated post processing:** C/C++, Pascal, Perl, DSP, Visual Basic, FORTRAN, 80X86 ASM. Fluent in HTML. Knowledge of Perl, JavaScript, Java, XML, and Microsoft .NET. Expertise with FPGA and DSP implementation of sophisticated filtering and control algorithms. Comfortable across multiple computer platforms: Windows, Linux/Unix, MS-DOS, Mac-OS, and real time systems. Local expert in several modeling, simulation, and design environments including Matlab, Simulink, and VEE, and in tying these to physical devices.
- **Professionally active.** Frequent publisher at controls conferences and journals. Senior Member of the IEEE. Chair of IEEE CSS History Committee. As Vice Chair for Industry and Applications of the 2004 American Controls Conference (ACC), recruited a record number of tutorial sessions. Vice Chair for Workshops at the 2006 ACC Special Sessions at the 2007 ACC, and Industry and Applications at the 2009 ACC. Program Chair of the upcoming 2013 ACC. General Chair of the upcoming 2016 ACC. Winner of the 2003 IEEE *Control Systems Magazine* Outstanding Paper Award.
- **Excellent communicator.** Have taught multiple internal classes both at Agilent and at HP. Tutorial paper on PLLs frequently downloaded from my external web site and has been used by several professors in their controls classes. Industrial mentor for several graduate students from top universities. Frequent invited speaker at universities in US and Europe. Fluent in French, passable in Spanish.
- **Contributor to the workplace infrastructure.** Host and organizer of an extremely popular series of technical Chalk Talks. Originator of idea behind Agilent Labs Academy, an internally generated training group at Agilent Labs. Member of the Agilent Labs Academy board. Created and taught two internal classes on Matlab. Member of the mentoring task force.

Summary of Professional Experience

Principal Project Engineer at Agilent Laboratories, Palo Alto & Santa Clara, CA, 8/04-present:
Servo engineer for Agilent Labs atomic force microscope (AFM) and precision interferometry projects.

- Developed new state space methods for precision interferometry.
- Analyzed sampling and bandwidth requirements for high speed AFMs.
- Developed new state-space methods and controller gain tuning methods for AFMs.
- Developed nearly automatic tuning of PID parameters using frequency response function measurements.
- Developed sophisticated demodulation algorithms in FPGA to improve non-contact methods.
- Developed minimum latency filtering and compensation algorithms for AFMs.
- 12 patent applications based on AFM work, 2 on interferometry. 7 granted so far.
- Raised company profile in AFM sessions at recent American Control Conferences.
- Founding board member of Agilent Labs Academy: an internal training program based on my white paper.
- Taught beginning and intermediate Matlab classes to engineers and managers across company.

Principal Project Engineer at Agilent Laboratories, Palo Alto, CA, 4/00-8/04:
Conducting research on measurement systems for high-speed optical communications.

- Developed high speed digital interface between high speed optical sampler and host computer.
- Created highly efficient, custom, modular time domain PLL simulation tool in C++ and Matlab.
- Wrote often cited PLL. Extended Lyapunov analysis to Classical Digital PLLs.
- Worked on creating Agilent's first 40 Gbps Bit Error Ratio Tester, granted *Test and Measurement World's 2003 Best in Test Award*.
- Wrote algorithms to generate test data, identify permuted channels, and rapidly generate eye maps from BER measurements (all patented).
- Co-chaired technical Chalk Talk series. Created matching algorithm for mentor program.

Member of the Technical Staff at Hewlett-Packard Laboratories, Palo Alto, CA, 10/88-3/00:
Conducted research on servo systems for magnetic and optical disk drives.

- Had original idea for high frequency wobbles, the fundamental invention allowing DVD+/R/RW to be drop in compatible with DVD-ROM readers. Patent reissued several times to increase licensing revenue.
- Architected and co-developed real time testbed and wrote software to automate measurements, post processing, and generation of web pages.
- Developed coherent demodulation algorithm for disk drive servo systems.
- Co-developed the now pervasive PES Pareto method of analyzing disk drive servo noise.
- Developed adaptive, multi-rate accelerometer feedforward algorithm for reducing effects of rotary shock and vibration in disk drives.
- Co-developed analysis methods for pivot friction nonlinearity.
- Did fundamental analysis of how, why, and when fuzzy logic controllers work.
- Developed DSP based MIMO control system which allowed loading of parameters directly from Matlab.
- Developed MIMO loop unwrapping algorithm to extend SISO instruments.

Sr. Research and Development Engineer for Ford Aerospace Corporation, Palo Alto, CA, 12/87-10/88: Worked on signal processing applications, control of distributed sensor network, and dynamic resource allocation for a signal processing application.

- Developed Lyapunov analysis of phase-lock loops

Research Assistant for Prof. Gene Franklin, Stanford University, 1/85-12/87:
Worked on adaptive control of nonlinear systems.

Computer Software Engineer for Digital Equipment Corporation, Nashua, NH, 5/83-8/83:
I did performance evaluation of backup facilities of VMS operating system.

Computer Software Engineer for Milliken & Co., Spartanburg, SC, 5/80-9/82:
Spartanburg, SC, as part of co-op program at Clemson University.

- Four co-op assignments.
- Worked on computer control and performance monitoring systems for large textile ranges, texturing machines, and spinning and dyeing machines.
- Created key document for explaining advantages of improved computer network to upper management.

Education

M.S. and Ph.D. in Electrical Engineering from Stanford University, 1984 and 1988

B.S. in Electrical Engineering from Clemson University, 1983. Graduated at top of class. Minor in Spanish.

References available upon request. Annotated CV, publications, & patents available at dabramovitch.com .