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Education

5/2011 *Executive MBA*

University of Wisconsin, Milwaukee

Applied project areas include data analysis and marketing. Coursework including organizational transformation, IT strategy, international business, executive communication, corporate finance, analysis of accounting statements, and boardroom dynamics. International business focus on Asia concluding with residential trip to Vietnam and Hong Kong.

1/2002 *PhD / Electrical Engineering*

12/1999 *MSE / Electrical Engineering*

University of Michigan, Ann Arbor, MI

Dissertation: *Hearing Aid Fitting with Genetic Algorithms*

Advisor: Gregory H. Wakefield, PhD

Major / Minor: Signal Processing / Communications

5/1998 *BS / Computer Engineering, with High Honors*

BS / Electrical Engineering, with High Honors

Milwaukee School of Engineering

Minor: Management Systems

Experience

9/2006–present *Program Director, Computer Engineering*

Milwaukee School of Engineering

Develop and maintain industry contacts, work with faculty to enhance the curriculum with emphasis on technical currency and innovation, champion extracurricular innovations to improve the student experience, and administer program policies related to student advancement, transfer credit, etc. Lead assessment activities; hosted ABET visits in 2012 and 2018.

3/2002–present *Professor*

Milwaukee School of Engineering

(Promoted from Associate Professor 7/2014; promoted from Assistant Professor 7/2008) Teach a variety of topics, most recently signals, DSP, and computer architecture. Meet with advisees quarterly to discuss academic and professional plans. Develop and execute various academic outreach programs for high school students. Industry relations. Senior project advising and coordination. Chair of faculty peer review committee (CFARC) for two years.

5/2003–present *Senior DSP Research Engineer II (every summer, sabbatical 2012–'13)*

Starkey Hearing Technologies, Berkeley, CA and Eden Prairie, MN

- Received 7 US patents in various hearing aid digital signal processing algorithm areas
- Developed deep neural networks (DNNs) for real-time fall detection in 2020
- Developed real-time speech enhancement using DNNs to combat high noise environments in 2018-'19. Applied a wide variety of TensorFlow, Keras, Python, and MATLAB capabilities.
- Developed hearing aid spatialization and localization approaches
- Developed DSP beamforming algorithms using convex optimization to focus hearing aids on sounds of interest
- Developed robust perceptual rank inferencing algorithm
- Designed and implemented experiments and infrastructure for genetic algorithm based parametric fitting of hearing aids using both custom hearing aid hardware and Pocket PC (eVc/MFC and .NET 2.0 Compact Framework)
- Developed and refined perceptual genetic algorithm
- Developed legacy applications in C#, C++, C, and Motorola 56k assembly

10/2018 –4/2019	<p>Visiting Professor NVIDIA, Santa Clara, CA</p> <ul style="list-style-type: none"> • Sabbatical with Metropolis Deep Learning Architectures group, focusing on audio analytics, specifically architecting deep, convolutional neural networks (DNN/CNN) for multistream audio, developing a TensorFlow training pipeline with physics-based augmentation, and targeting GPU deployment using TensorRT. • Developed theory and implemented algorithm to compensate for real-world stream desynchronization. • Worked with NVIDIA DLI (Deep Learning Institute), reviewing content and lab materials for 4 courses, and assisted with delivering 14 hours of customer instruction at GTC (GPU Technology Conference).
3/1999– 1/2002	<p>Graduate Student Research Assistant University of Michigan, Department of Electrical Engineering and Computer Science Performed genetic algorithm and perceptual tuning research</p>
8/2000– 1/2002	<p>Advanced Research Team Member Starkey Hearing Technologies, Eden Prairie, MN Developed genetic algorithm-based hearing aid fitting algorithm in conjunction with dissertation research, developed experimental fitting system in MATLAB, C, and Motorola 56k assembly</p>
6/2000– 7/2000	<p>Technical Consultant Adapted Wave Technologies, Ann Arbor, MI Implemented fast block transform algorithms in C, multi-platform profiling and testing</p>
6/1996– 9/1998	<p>Central Research Team Member Johnson Controls, Inc., Glendale, WI Researched and developed smart building technologies. Responsibilities included: interfacing emulation software to DAQ/RIO, evaluating and interfacing softPLCs, ActiveX integration, TCP-level service programming, Web development including GIS applications and database integration</p>
9/1996– 7/1998	<p>Webmaster Milwaukee School of Engineering Researched user needs, trained and supported developers, wrote site automation software in C and Perl, integrated new and legacy database systems</p>
Professional societies	<p>IEEE Senior Member (Institute of Electrical and Electronics Engineers, S'93, M'02, SM'06) ASEE Member (American Society for Engineering Education, M'02)</p>
Teaching experience	<p>19 years with an emphasis on digital signal processing, digital logic, senior project advising and coordination, information security, and computer architecture. Taught several other classes across the computer, electrical, and software engineering curricula approximately one to three times. Significant recent contributions include development of several EE3221 DSP labs and production of videos for all EE3032 Signals and Systems content to support COVID-modified instruction.</p>
Honors and awards	<p>MSOE Alumni Achievement Award (2017) Oscar Werwath Distinguished Teacher Award Winner (2016) STEM Forward Young Engineer of the Year (2013) Electrical Engineering and Computer Science Department Fellowship (University of Michigan, 1998–2002) Motorola Foundation fellowship (1999–2000) Alumni Association Student Achievement Award (Milwaukee School of Engineering, 1998) Newport Corporation Award of Excellence (for outstanding optics project, 1998) Fred F. Looock Outstanding Student Award (Milwaukee School of Engineering, 1997)</p>
Patents	<p>7 US patents granted as of 2021, several as first inventor, in genetic algorithms for perceptual fitting, robust perceptual rank inferencing, perceptual rank inferencing, and spatialization. Full list on website.</p>
Invited presentations	<p>Eric Durant, "Removing reverberation and noise from speech using artificial intelligence," IEEE Section Meeting, December 2015, Milwaukee, WI. Eric Durant, "Perceptually Motivated ANC for Hearing-Impaired Listeners," IEEE Section Meeting, November 2013, Milwaukee, WI. Henry Welch, Deepti Suri, and Eric Durant, "Using Targeted Assessments to Satisfy Achievement of Program Outcomes," <i>Best Assessment Processes (BAP) IX</i>, April 2007, Terre Haute, IN. Eric A. Durant, Gregory H. Wakefield, Dianne J. VanTasell, and Martin E. Rickert, "Hearing Aid Fitting with a Genetic Algorithm," <i>International Hearing Aid Research Conference (IHCON)</i>, August 2002, Lake Tahoe, CA.</p>
Invited papers	<p>Henry Welch, Deepti Suri, and Eric Durant, "Rubrics for Assessing Oral Communication in the Capstone Design Experience: Development, Application, Analysis and Refinement," <i>International Journal of Engineering Education (IJEE)</i>, 25(5), 2010.</p>

Journal articles	<p>Eric A. Durant, Gregory H. Wakefield, Dianne J. VanTasell, and Martin E. Rickert, "Efficient Perceptual Tuning of Hearing Aids with Genetic Algorithms," <i>IEEE Transactions on Speech and Audio Processing</i>, vol. 12, no. 2, March 2004.</p> <p>Eric A. Durant and Gregory H. Wakefield, "Efficient model fitting using a genetic algorithm: Pole-zero approximations of HRTFs," <i>IEEE Transactions on Speech and Audio Processing</i>, vol. 10, no. 1, January 2002.</p>
Magazine articles	<p>E. Durant, "CE2016: Guidelines for Forward-Looking Computer Engineering Curricula," in <i>Computer</i>, vol. 48, no. 9, pp. 102-104, September 2015.</p> <p>E. Durant, "Imagine This!," <i>Pathways Magazine</i>, September 2015.</p>
Select conference papers presented	<p>(complete list at Google Scholar link)</p> <p>Eric Durant, Jinjun Xiao, Buye Xu, Martin McKinney, and Tao Zhang, "Perceptually Motivated ANC for Hearing-Impaired Listeners," <i>Proceedings of the 2013 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)</i>, New Paltz, NY, October 2013.</p> <p>Eric Durant, Ivo Merks, Bill Woods, Jinjun Xiao, Tao Zhang, and Zhi-Quan Luo, "Efficient convex optimization for real-time robust beamforming with microphone arrays," <i>Proceedings of the 2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)</i>, Prague, Czech Republic, May, 2011.</p> <p>Russ Meier, Steven L. Barnicki, William Barnekow, and Eric Durant, "Work in Progress - Year 2 Results from A Balanced, Freshman-first Computer Engineering Curriculum," <i>Proceedings of the 38th Annual Frontiers in Education (FIE) Conference</i>, October 2008. [did not present]</p> <p>Owe Petersen, Stephen Williams, and Eric Durant. "Understanding ABET Objectives and Outcomes." <i>Proceedings of the 2007 ASEE Annual Conference</i>, Honolulu, HI, June 2007. [did not present]</p> <p>Eric A. Durant, "Combining Requirements and Interdisciplinary Work," <i>Proceedings of the 2006 ASEE Annual Conference</i>, Chicago, IL, June 2006.</p> <p>Henry L. Welch, Deepti Suri, and Eric Durant, "Rubrics for Assessing the Capstone Design Experience: Development, Application, Analysis and Refinement," <i>Best Assessment Processes (BAP) VIII</i>, Session 59, Terre Haute, IN, February 2006.</p> <p>Deepti Suri and Eric Durant, "Teaching Requirements through Interdisciplinary Projects," <i>Proceedings of the 2004 ASEE North Midwest Regional Conference</i>, October 2004.</p>
Grants	<p>NSF Grant 1338752, \$10,000, co-PI with Mark Ardis of Stevens Institute of Technology, "Computer and Software Engineering Curricula Development Workshops," awarded 8/13/2013.</p>
Professional activities	<p>ABET Program Evaluator (PEV) for Computer Engineering and Electrical Engineering programs (7/2014–present; 6 visits executed through early 2021)</p> <p>Registered as PE (Professional Engineer) in Wisconsin (2016–present)</p> <p>IEEE-CS chair of the CE2016/CE2004 (professional society guidelines for computer engineering curricula) joint revisions task force with ACM (2010–c. 2015)</p> <p>Program Committee Member for IEEE Workshop on the Applications of Signal Processing to Audio and Acoustics (WASPAA) (2003)</p>
Professional activities – reviewer	<p>IEEE Communications Magazine (2017)</p> <p>IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) (2013)</p> <p>IEEE Workshop on the Applications of Signal Processing to Audio and Acoustics (WASPAA) (2011)</p> <p>International Journal of Engineering Education (2010)</p> <p>IEEE Transactions on Audio, Speech, and Language Processing (TASL) (2007)</p> <p>ASEE Annual Conference Papers, Software Engineering Constituent Committee (SwECC) (2005, 2006)</p> <p>IEEE Transactions on Image Processing (2005–2006)</p> <p>IEEE Transactions on Signal Processing (2005)</p> <p>All chapters of "Interactive Computer Graphics: A Top-Down Approach Using OpenGL™" 4ed (2004)</p> <p>IEEE Signal Processing Letters (2003)</p>
Professional activities – participant¹	<p>IEEE CS representative on CC2005/CC2020 revision (2016–2021)</p> <p>MMAC AI expert working group (2020)</p> <p>Order of the Engineer (inducted 2019, #500 at MSOE)</p> <p>Interviewed about the future of AI on Jeff Nigh's "STEM on FIRE" podcast (2018)</p> <p>Interviewed for Milwaukee Journal Sentinel article "Foxconn puts its focus on internet of things" (2017)</p> <p>ABET Evaluator Training (BMES, Chicago, 2006; ABET, Baltimore, 2014)</p> <p>KEEN (Kern Entrepreneurship Education Network) Milwaukee Conference (2008)</p> <p>KEEN Chicago Workshop (2007)</p> <p>KEEN Glendale, AZ Meeting (Thunderbird School of Global Management) (2007)</p> <p>Electrical and Computer Engineering Department Heads Association (ECEDHA) Annual Meeting (2007)</p> <p>Information Security and Advanced Information Security SEI week-long courses (2005)</p> <p>ASEE ExcEEd Effective Teaching Workshop (Santa Clara University, 2004)</p> <p>On-line Faculty Development Course (University of Wisconsin, 2003)</p> <p>ASEE North Midwest Section Conference (University of Wisconsin, 2003)</p>

¹ All conferences where a paper was given (listed above) were attended unless specifically noted. These and conferences where invited presentations or special sessions were given, also listed above, are not repeated in this section.

Company visits organized	<p>Sharp Packaging, Sussex, WI (11/2019) Rockwell Collins, Cedar Rapids, IA (8/2007 with alumni association; 12/2011 with student tour; attendee only 12/2013, 12/2014, 12/2015, 12/2017) Direct Supply, Milwaukee, WI (3/2007, 10/2017) NVIDIA, Santa Clara, CA (7/2009, 4/2017) Honeywell, Pleasant Prairie, WI (11/2016) Plexus, Neenah, WI (1/2012, 10/2015) QuadTech, Sussex, WI (10/2014) FedEx Ground/SmartPost, Cudahy/New Berlin, WI (4/2007, 7/2008, 11/2013) Rockwell Automation, Milwaukee, WI (1/2012) Honeywell, Oak Creek, WI (2/2010) GE Healthcare, Wauwatosa, WI (2/2010) Stark Investments, Milwaukee, WI (7/2007)</p>
Other extramural activities	<p>University of Wisconsin–Milwaukee Executive MBA Alumni Board Member (2011–c. 2017) Science Fair Judge, University School of Milwaukee (2008–2021, nearly every year) University of Michigan Alumni Club of Milwaukee. Recent activities include organizing quarterly book club since 2014 and chair/selection committee for annual scholarship. (2002–present) Judge for Johnson Controls high school robotics class capstone competition (2007–2009, 3×) Volunteer for MSOE’s Jazz in the Park activities through the East Town Association (2002–2007, 4×)</p>
University activity highlights (MSOE)	<p>Moderator/Head Moderator, Regional Science Bowl (2003–2021, nearly every year); led volunteer training Global Brigades Faculty Advisor, travel with students to Central America for a week (2017–2020, 4×) Helped organize MSOE alumni event at NVIDIA, Santa Clara, CA (2019) Coordinator, Op Computer Programming Competition for high school students (2002–2019, all but 4 years) MSOE Faculty/Staff Book Club Facilitator (2014–present, with sabbatical year break) Chair of Vice President of Academics Search Committee (8/2016–3/2017) Travel with and support Dr. Ottman’s master’s students in “Doing Business with China” (11 days, 2015) College Faculty Appointment and Review Committee (CFARC) (chair 9/2014–5/2016, member 9/2017–5/2018) Benefits Committee Chair (2003–2010): led successful effort to increase 403(b) matching rate to 6% Master of Ceremonies, Faculty and Staff Recognition Dinner (4/2007)</p>
Select other university activities (MSOE)	<p>Co-Chair for Faculty and Staff Giving Campaign (2021) Advise student Photography Division of the Student Art and Design Club (9/2012–present) Advise student Developer Club (2020–present) Advise student SCOE Robotics club (12/2010–c. 2017) Cybersecurity MS Degree Investigation, convened industry panel (2016) Launched “Third Thursday” event series with Dr. Wujie Zhang, “Beyond Measure” screening (2016) Alumni Board Faculty Representative (2003–c. 2012) Wrote numerous student letters of recommendation (2003–present) Unofficial Photographer at scores of campus athletics and theater events, many published photos (2003–2020) Proctor/judge at CCDC (Collegiate Cyber Defense Competition) (2/2014, 2/2015) CIO Search and Interview Advisory Panel (8/2014–11/2014) Mentor Program (2003–2012, 2013–2014) Commencement (2003–present, 2–3×/year) Representative at Alumni Association Reception for graduates (2004–2014 19×; 11/2005 gave speech) Faculty Senate (6/2004–5/2006, 9/2008–5/2009, 9/2011–5/2012), Secretary (9/2005–5/2006, 9/2008–5/2009) Quiz Bowl Faculty Team (2003, 2004, 3/2005, 12/2005, 2006, 2007, 2008, 9/2009, 3/2011, 2012) Selection Committee, Daniel Sahs and Tom Davis student awards (9 times during 2005–2014) Volunteer, Midnight Breakfast (2/2003–2/2018, approximately 23 times) Interviewer, President’s Scholarship (9 times during 2003–2012); CE reception (2008) Engineering Discovery Day Keynote (2011) Web Advisory Team Member (2007–c. 2009) Nominator (successful) of student for Daniel Sahs Award for Service (4/2009) Member, Fall In-Service Committee (4/2009) Established “The Marilyn Durant Memorial Endowed Scholarship Fund” (1/2009) Judge, MLK Art Contest (1/2009) In-Service Presenter, “20 Great Reads” (8/2008) In-Service Presenter, “Senior Design” (8/2007) Coordinated IEEE Publications Services visit (IEEE Expert Now) for faculty (5/2007) In-Service Presenter, “Developmental Advising” (8/2006) Advisor, <i>Ingenium</i> student newspaper (2002–2006) Volunteer, Campus Visit Day Luncheons (2003–2006, four times) Nominator (successful) of student for Outstanding Mentor Award (4/2004) Selection Committee, R. Pieper Endowed Chair for Servant-Leadership (2004) CSI (College Student Inventory) advisor training and advising (2004) Events Subcommittee, Centennial Celebration Committee (2002)</p>

Department activities (MSOE EECS)

Advise CE students (2002–present)
Represented department at most open houses (2002–present)
Initiated and executed ongoing series of CE student social and networking events (2007–2019, 25×)
Initiated and organized EECS industry forum panel discussion for students (2010–2020, nearly every year)
Present and discuss CE program at Accepted Student Days (about 2/3 of events since 2013)
Coordinated CE and SE senior class picture gift (2004–2019, nearly every year)
Department promotion committee member (2017)
Chaired EECS Chair faculty search (2012)
Initiated and executed series of Rockwell Collins EECS Industry Day events for EECS students (12/2011)
Organized and served as a proctor for IEEEExtreme worldwide student competition (2009, 2010, 2011; proctor only most years since 2014)
Launched semester exchange for CE students with Czech Technical University (CTU) (2010, ongoing)
Taught two- or three-day sequence in CE Focus summer program for high school students (2004–2008)
Coordinated CE and SE senior design (5/2004–5/2007)
Major updater of software tools used by students in embedded systems courses (2002–2006)
Organized and presented Software Development Lab (SDL) SQL Training Session (2003)

Research interests

Signal processing (convex optimization, beamforming, LMS applications, audio coding, image processing), neural networks, perceptual tuning, fast algorithms, and hearing