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The College of New Jersey
Departments of Music & Interactive Multimedia
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ACADEMIC APPOINTMENTS

The College of New Jersey (TCNJ)

2015- Joint Appointment, Department of Interactive Multimedia
2010- Associate Professor, Department of Music
2005-2010 Assistant Professor, Department of Music

Worcester Polytechnic Institute

2000-2005 Adjunct Assistant Professor, Department of Humanities and Arts

Massachusetts College of Art

2004-2005 Visiting Assistant Professor and Visiting Artist, Dynamic Media Institute

Massachusetts Institute of Technology

2003 Interim Technical Director, Electronic Music Studio, Department of Music

Harvard University

2002 Clifton Artist in Residence, Harvard Office for the Arts

EDUCATION

Massachusetts Institute of Technology

2000 Ph.D. Media Arts & Sciences (supervisors: T. Machover, R. Picard)
Research Assistant, Hyperinstruments & Affective Computing Groups
Dissertation: Inside the Conductor's Jacket: Analysis, interpretation, and
musical synthesis of expressive gesture

1996 M.S. Media Arts & Sciences (supervisor: T. Machover)
Research Assistant, Hyperinstruments Group
Thesis: Toward an Understanding of Musical Gesture: Mapping
expressive intention with the Digital Baton

Harvard University

1992 A.B. Music, *magna cum laude*
Honors Thesis: The art of interpretation: conducting Mozart's *Magic Flute*

GRANTS

- 2020 co-author, proposal to establish the TCNJ Center for Creative Technology & Emerging Media (~\$60,000 to date from alumnus donor)
- 2018 TCNJ Cultural-Intellectual Community funds (PI; \$2,000), Michael Ray concert
- 2016 Major Grant Award, New Jersey Council for the Humanities (co-PI; \$10,000)
- 2016 Don Evans Memorial Fund (co-PI; \$1,150) for Trenton Makes Music
- 2015 College Music Society Community Engagement Seed Grant (co-PI; \$200)
- 2015 TCNJ Cultural-Intellectual Comm. funds (co-PI; \$1,912), Trenton Makes Music
- 2015 Engagement Mini-Grant, TCNJ Student Affairs (PI; \$2334), Sound Thinking
- 2011 National Science Foundation (NSF) award supplement (co-PI; \$29,802), plus \$4,000 from Deans of Science, Engineering, & ArtsComm for MMI workshop
- 2011 TCNJ Cultural-Intellectual Comm. “Innovation” grant (PI; \$1,000), MMI wkshop
- 2009 NSF Creative IT RUI, Conducting Robots (co-PI; \$359,477)
- 1992-1993 Michael C. Rockefeller Memorial Fellowship (\$10,000), Harvard University
- 1988 National Endowment for the Humanities Younger Scholars Program (\$1,600)

HONORS

- 2018 inducted into Phi Kappa Phi national honor society
- 2011 *Conductor's Jacket* invention selected for MIT150 Exhibition through public nomination and online vote by the MIT community; identified as one of the top 150 projects in MIT's 150-year history. Displayed in the Compton Gallery January 8-December 31, 2011. Subsequently acquired by the MIT Museum and inventoried in its permanent collection, representing the “Uniquely MIT” theme and Tech Night at the Pops concerts: <http://museum.mit.edu/150/55>
- 2010 inducted into Pi Kappa Lambda national music honor society
- 2008 Excellence in Technology Education Award, New Jersey Technology Council
- 2000 Young Investigator Travel Award, Acoustical Society of America
- 1999 Best Student Paper Award in Musical Acoustics, Acoustical Society of America
- 1998-1999 IBM Research Fellowship, MIT Media Laboratory
- 1996-1997 Motorola Research Fellowship, MIT Media Laboratory
- 1994-1996 Interval Research Fellowship, MIT Media Laboratory
- 1992 Doris Cohen Levi Prize, Harvard University
- 1992 David McCord Prize, Lowell House, Harvard University
- 1992 Perkins Scholarship, Harvard University
- 1989 Columbia Scholastic Press Association Gold Circle Award
- 1988 National Scholar, Harvard University (highest honor awarded entering students)
- 1988 National Merit Scholarship

CREATIVE WORK

Interactive Music Systems

- 2017 *The Flame in the Flood* interactive animation for Boston Pops Orchestra. Real-time audio signals drove the visual display, controlled by MIDI (APC40) and game

controllers. Collab. with indy game designer and AI expert. Nominated by Harvard class reunion committee, approved by Boston Pops artistic staff. ([concert video](#))

2010-2018 *Six Conduct the Orchestra* interactive museum exhibits for Clay Center for the Arts & Sciences, ABC Extreme Makeover Home Edition (episode 806), Children's Discovery Museum, Curious Kids Museum, Kohl Children's Museum, and Ravinia Music Festival. Professional contracts totaling \$42,890.60 produced by Immersion Music. ([2013 Kohl Museum exhibit](#)) ([2017 Clay Center exhibit](#))

2008-2011 *Virtual Maestro* interactive conducting kiosk for Wii, developed for UBS and toured to performing arts venues Avery Fisher Hall, Boston Symphony Hall, Kimmel Center (Philadelphia), LA Walt Disney Hall, Severance Hall (Cleveland), Montreux Jazz Festival, Ravinia Festival. Invited exhibit, 2011 NJ Festival of Electronic Arts. ([Wii Conductor Hero video by TCNJ](#)) ([2008 Wired Magazine review](#))

2003-2009 *You're the Conductor* exhibit, Boston Children's Museum. Visitors conducted Boston Pops Orch. with infrared sensor baton. Centerpiece of \$2 million *Making America's Music* project. Custom gesture-tracking electronics, software, and playback control. Collaborated with Stanford researchers, secured corporate sponsors, presented on Discovery Channel & WIRED NextFest. 1 million visitors in 2004-2007 tour. ([2005 video of Boston exhibit](#)) ([2005 video from WIRED NextFest](#))

2000-2005 *Digital Conducting Laboratory* at Arizona State University. Designed student etudes, wrote software to process sensor data, interpret conducting patterns, tempo, dynamics, and output MIDI sound. Developed sensor sleeve. 150 students used the lab for coursework, inc. two Masters' theses and two journal articles ([1](#)). Featured on BBC World Service and Discovery Channel. ([2001 ABCNews article](#))

1997-2000 *Conductor's Jacket* sensor interface, presented with Boston Pops Orchestra, MIT Sens*bles Symposium, CNN Headline News, featured in the MIT150 Exhibition (nominated/voted by MIT alumni), and since 2011 in the permanent collection of the MIT Museum. ([MIT Media Lab project page](#)) ([Sens*bles presentation](#))

1996-2000 *Digital Baton* sensor interface designed and built with a team at MIT; patent obtained 1999. Featured in Tod Machover's *Brain Opera*; 150 performances on four continents over two years, 1996-1998. ([PBS Scientific American Frontiers](#))

Scholarly/Creative collaborations

2020-present collaboration with "Plunderphonics" composer John Oswald to upgrade the tech for his 2001 *Concerto for Conductor*. Mentored 4 students in User-Centered Musical Design (IMM470/MUS370) to construct wireless trigger system, integrate into fitted gloves, connect via custom Max8 code, and control sample bank in Ableton Live.

2019-present collaboration with Robert Wood Johnson University Hospital, Hamilton NJ: "Online Music Therapy Collaborative Study for Cancer Patients," approved by RWJUH and TCNJ IRB. Worked with RWJUH Foundation board and staff in the

Cancer Center. TCNJ students in User-Centered Musical Design course created music therapy interventions, designing a musical app for cancer patients to explore during chemotherapy infusions. Students worked with hospital staff to distribute surveys and communicate with patients in the user testing and evaluation of the app.

2014-present Co-Director, *Trenton Makes Music*, with TCNJ Associate Professor Kim Pearson. Goal: to coalesce the community of Trenton, NJ around its rich cultural legacy and encourage reinvestment, local pride, and socioeconomic development. We worked with TCNJ students to develop online resources and public-facing media including a website, podcasts, audio recordings, theme songs, oral histories, interviews, interactive maps, timelines, social media posts, and ongoing conversations with regional constituencies. Seven concerts/events featuring Sarah Dash and Michael Ray, *TrentonMusicHistory* Youtube channel, web archive at www.trentonmakesmusic.org.

2010-2015 collaboration with Marvin Minsky, mentor and AI pioneer (1927-2016): initially begun to document Minsky's engagement with music through the lens of his "Music, Mind, and Meaning" paper (*Computer Music Journal* 5.3, 1981), the project evolved into a set of recorded conversations and an NSF-funded workshop in 2012 (<https://owd.tcnj.edu/~mmi/>). Hundreds attended, including Nobel Prizewinner John Nash. *Minsky's Keynote* is on the TCNJ Center for the Arts Youtube channel, and TCNJ issued a remembrance at Minsky's passing. Two students and I participated in a follow-up workshop at the MIT Media Lab in 2014. A shared volume was prepared but not published. Related documents at musicmindmeaning.org, currently unavailable.

2008-2013 collaboration with 3 TCNJ colleagues on Conducting Robots: funded by an RUI grant from NSF, we offered an advanced course for 4 semesters cross-listed Computer Science, Mechanical Engineering, Interactive Multimedia, and Music. Student teams created robots and graphic visualizers that conducted the college orchestra. We used pre- and post-assessments to study whether students could learn to be more creative problem-solvers. <https://owd.tcnj.edu/~conducto/>

2005-2006 collaboration with the Boston Symphony Orchestra and McGill University (Dan Levitin and Stephen McAdams) on experiment to quantify the emotional effects of live music and how emotion is conveyed from conductor to musicians to audience. Physiology sensors worn by conductor, five musicians, and 100 audience members. Second experiment with HD video recording. Covered in NY Times, USA Today, AP, Boston Globe, Mix, Stereophile, La Presse, Toronto Star. (Discovery Channel feature)

Musical Compositions (selected)

2017 *Jersey Fresh* for string orchestra, harp, and electronics, commissioned by the TCNJ Orchestra (Harold Levin, conductor), premiered February 2017 in Mayo Concert Hall with student soloists

2013 *Platonic Harmonic* for violin and electronics in Max, 2014 invited performance in Automatic Accompaniment Demonstration Concert at the Acoustical Society of America annual conference; 2013 premiere in TCNJ "Mostly Millennial" concert

2010 *Guru Shishya Parampara* for violin and electronics in Max, Sept. 2011 invited performance in “Musical Creativity East and West,” a concert blending Indian Classical traditions w. American Jazz, by MIT Club of Boston, March 2010 premiere solo performance at TCNJ Faculty Composers Concert

2008 *Yezie Five Loops* audio work, premiered at TCNJ Faculty Composers Concert

2001 *SP/RING* for interactive Conductor’s Jacket interface and digital video control premiered at Boston Cyberarts Festival 2001, featured on Discovery Channel

CONSULTING

2020-2021 Consultant, Baton-X Project, Johns Hopkins U./Peabody Conservatory
Principal Investigators: Thomas Dolby, Marin Alsop, and Stephen Zeiler
additional outside consultant: Eric Whitacre, virtual choir conductor & composer
Baton-X Alpha demo video, Sept. 2020

2020-2021 curriculum redesign 6th grade General Music, Hopewell Valley RSD, NJ
2019 Consultant, Music Technology Program, University of Kentucky School of Music

2018 Invited Proposal Reviewer, Research Foundation Flanders (Belgium)

2015 Participant, NSF STC Pre-Proposal, ExCITe Center Drexel Univ. (not funded)

2012 Participant, NSF STC Pre- & Full Proposal, ExCITe Ctr. Drexel (not funded)

2012 Advisory Board member, Georgia Institute of Technology NSF Grant Proposal
(Andrea Brown, “Using Technology to Improve Kinesthetic Skill Learning of Music Conductors”) (not funded)

2012 Fact Witness, International Trade Commission (prior art on Nintendo Wii patents)

2011 Legal consultant to Cooley LLC for Nintendo Corporation (Wii IP)

2009 Leonard Bernstein Office, NYC (advised on interactive conducting systems)

PUBLICATIONS

Issued US Patent

Marrin, T., et al. (1999). Apparatus for Controlling Continuous Behavior Through Hand & Arm Gestures. U.S. Patent no. 5,875,257, February 23, 1999. (184 citations)

Book chapters

Johannsen, G., & Nakra, T. (2010). Conductors’ Gestures and Their Mapping to Sound Synthesis. *Musical Gestures: Sound, movement, and meaning*, Routledge, 264-298.

Ault, C., Warner-Ault, A., Wolz, U., & Nakra, T.M. (2010). Kinesthetic Communication for Learning in Immersive Worlds. *Serious Game Design and Development: Technologies for Training and Learning*, IGI Global.

Marrin Nakra, T. (2000). Searching for meaning in gestural data: interpretive feature extraction and signal processing for affective and expressive content. *Trends in Gestural Control of Music. IRCAM, Centre Pompidou.*

Peer-reviewed journal articles

Nakra, T.M. (2020). Maximizing Student Outcomes During a Period of Disruption: Insights from a Music Technologist. *College Music Symposium*, 60:2, pp. 1-4.

Nakra, T.M. & BuSha, B.F. (2014). Synchronous Sympathy at the Symphony: Conductor and Audience Accord. *Music Perception Journal* 32(2), 109–124, ISSN 0730-7829, DOI: 10.1525/MP.2014.32.2.109.

Nakra, T.M. (2014). *Interactive Conducting Systems Overview and Assessment*. Journal of the Acoustical Society of America 135 (4), p. 2377. (invited paper; abstract only)

Wolz, U., Ault, C., & T.M. Nakra (2007). Teaching Game Design through Cross-Disciplinary Content and Individualized Student Deliverables. *Journal of Game Development* 2(1).

Nakra, T. M. (2002). Synthesizing Expressive Music through the Language of Conducting. *Journal of New Music Research*, 31(1), 11-26.

Nakra, T.M. (2001). *The Concerto for Conductor: a new musical form*. Journal of the Acoustical Society of America 110 (5), p. 2691. (abstract only, no full paper)

Nakra, T.M. & Hill, G. (2000). *Quantitative Practice for Students at the Digital Conducting Laboratory*. Journal of the Acoustical Society of America 108 (5), p. 2538. (abstract only, no full paper)

Nakra, T.M. (1999). *Incorporating gestures into the musical control stream with the Conductor's Jacket*. Journal of the Acoustical Society of America 106 (4), p. 2161. (awarded Best Student Paper in Musical Acoustics; abstract only, no full paper)

Peer-Reviewed Conference Papers

Nakra, T.M. (2020). *Teaching Interactive Music Programming: easing into creative coding skills for music majors*. Joint meeting, Association for Technology in Music Instruction and The College Music Society, Miami, FL (online presentation).

Nakra, T.M. (2019). *Podcasting for Trenton: a template for student engagement with local musical histories*. Joint meeting, Association for Technology in Music Instruction and The College Music Society, Louisville, KY.

Nakra, T.M. (2018). *Immersive Pedagogy for Music Technology*. Joint meeting, Assoc. for Technology in Music Instruction and The College Music Society, Vancouver, BC.

Nakra, T.M. (2015). *Improved Methods for Measuring Synchronous Sympathy*. 4th International Conference on Music and Emotion (ICME4), University of Geneva.

Kuiphoff, J. & Nakra, T.M. (2014). *Promoting Digital Lit. & Cultural Diversity through Develop. of Interactive Wall Mural*. Creative Engagemt.: Thinking w/Children, Prague.

Salgian, A., Nakra, T.M., Ault, C., and Wang, Y. (2013). *Conducting Robots – Bridging the Gap between Science, Technology and the Arts in the Undergraduate Curriculum*. IEEE Integrated STEM Education Conference, Princeton NJ.

Salgian, A., Nakra, T.M., Ault, C., and Wang, Y. (2013). *Teaching Creativity in Computer Science*. ACM Technical Symposium on Computer Science Education.

Salgian, A., Nakra, T.M., Ault, C., Wang, Y., and Stone, M. (2012). *A Theory of Multiple Creativities: Outcomes from an Undergraduate Seminar in Conducting Robots*. Proceedings, Music, Mind, and Invention Workshop, Ewing, NJ.

Rahimi, N., Mastro, M., Nakra, T.M., and BuSha, B. (2012). *Correlating Emotional Arousal to Musician Performance*. Proceedings, Music, Mind, & Invention Workshop.

Salgian, A., Ault, C., Nakra, T., Wang, J., and Stone, M. (2011). *Multidisciplinary Computer Science through Conducting Robots*. ACM Technical Symposium on Computer Science Education (SIGCSE), March 2011.

Ault, C., Salgian, A., Nakra, T.M., and Wang, J. (2011). *The Mechanical Maestro with a Human Heart: Interdisciplinary Collaboration through Orchestra-Conducting Robots*. New Media Consortium Summer Conference.

Wang, J., Ault, C., Nakra, T.M., Salgian, A. and M. Stone (2011). *The Outcomes of an Interdisciplinary Undergraduate Course Involving Engineering, Science and Arts*. American Society for Engineering Education Conference.

Nakra, T.M., Wang, Y., Salgian, A., and C. Ault (2010). *Orchestral Conducting for Non-Humans: its Impact in Interdisciplinary Education*. Proceedings of the IROS (Int. Conf. on Intelligent Robots & Systems) Workshop on Robots and Musical Expression.

Nakra, T.M., Tilden, D. and A. Salgian (2010). *Improving Upon Musical Analyses of Conducting Gestures Using Computer Vision*. Proceedings of the Int. Computer Music Conf., SUNY Stony Brook. ISBN: 0-9713192-8-6. (<https://youtu.be/WAfgnRyHq3Q>)

Wang, J., Ault, C., Nakra, T.M., Salgian, A. and M. Stone (2010). *An Interdisciplinary Undergraduate Course Bridging the Gaps Between Engineering, Science and the Arts*. American Society for Engineering Education Conference.

Nakra, T.M., Y. Ivanov, P. Smaragdis, and C. Ault (2009). *The UBS Virtual Maestro: An Interactive Conducting System*. NIME 2009 International Conference of New Interfaces for Musical Expression, Carnegie Mellon University.

Nakra, T.M., A. Salgian, and M. Pfirrmann (2009). *Musical Analysis of Conducting Gestures Using Methods from Computer Vision*. Int. Computer Music Conference. (<https://youtu.be/KOVWIPv3DYs>)

Hashida, M., Nakra, T.M., Katayose, H., Murao, T. Hirata, K., Suzuki, K, Kitahara, T. (2008). *Rencon: Performance Rendering Contest for Automated Music Systems*. International Conference on Music Perception and Cognition, Sapporo Japan.

Wolz, U., Ault, A.W., Ault, C., Nakra, T.M., and K. Pearson (2008). *Immersive Modern Language Learning with Principled Pedagogy*. Breakout session (75 minutes), New Media Consortium Summer Conference, Princeton University.

Wolz, U., Ault, C., and Nakra, T.M. (2008). *What WE can do with the Wii*. '5 Minutes of Fame' presentation, New Media Consortium Summer Conference, Princeton Univ.

Salgian, A., Pfirrmann, M. and T.M. Nakra (2007). *Follow the Beat? Understanding Conducting Gestures from Video*. 3rd International Symposium on Visual Computing, Lecture Notes in Computer Science Series, Springer.

Wolz, U., Ault, C. and T. Nakra (2007). *Teaching Game Design Through Cross-Disciplinary Content and Individualized Student Deliverables*. Microsoft Academic Days on Game Development in Computer Science Education.

Ault, C., Nakra, T., Pearson, K., Sanders, P., and Wolz, U. (2006). *Collaborative Learning via 3-D Game Development*. ACM SIGGRAPH Conference Proceedings.

Wolz, U., Ault, C., Nakra, T., Sanders, P. and Pearson, K. (2006). *Video Game Design as a Vehicle for Multidisciplinary Collaboration*. New Media Center Summer Conference Proceedings, Case Western University.

Lee, E., Nakra, T.M., & Borchers, J. (2004). *You're the Conductor: A Realistic Interactive Conducting System for Children*. International Conference on New Interfaces for Musical Expression, Hamamatsu, Japan, pp. 68-73.

Nakra, T.M. (2003). *Immersion Music: A Progress Report*. New Instruments for Musical Expression Conference, McGill University, Montreal.

Nakra, T.M. (2002). *Musical Performance Applications of Affective Computing*. Invited paper, Physiological Computing Workshop, CHI Human Factors Comp. Systems, WI.

Nakra, T.M. (2001). *Translating Conductors' Gestures to Sound*. International Workshop on Human Supervision and Control in Engineering and Music, pp. 139-144.

Marrin, T. & Picard, R. (1998). *The Conductor's Jacket: a Device for Recording Expressive Musical Gestures*. Int. Computer Music Conf., Ann Arbor, pp. 215-219.

Marrin, T. & Picard, R. (1998). *Analysis of Affective Musical Expression with the Conductor's Jacket*. XII Colloquium for Musical Informatics, Gorizia, Italy, pp. 61-64.

Blumberg, B., M. Johnson, M. Hlavac, C. Kline, K. Russel, B. Tomlinson, S. Yoon, A. Wilson, T. Marrin, et al. (1998). *Swamped! Using Plush Toys to Direct Autonomous Animated Characters*. ACM SIGGRAPH Enhanced Realities, Orlando.

Marrin, T. & Paradiso, J. (1997). *The Digital Baton: a Versatile Performance Instrument*. Int. Computer Music Conference, Thessaloniki, Greece, pp. 313-316.

Marrin, T. (1997). *Possibilities for the Digital Baton as a General-Purpose Gestural Interface*. CHI Conference on Human Factors in Computing Systems, pages 311-312.

Peer-Reviewed Posters

Nakra, T.M. (2021). Human-Centered Musical Design. Joint meeting, Association for Technology in Music Instruction and The College Music Society, Rochester, NY.

Nakra, T.M. & Pearson, K. (2017). *Trenton Makes Music: the Sound of a City*. Speech & Audio in the Northeast Workshop, Google NYC.

Salgian, A., Agina, L., & T.M. Nakra (2014). *Teaching Robots to Conduct: Automatic Extraction of Conducting Info. from Sheet Music*. Int. Computer Music Conf., Athens.

Rahimi, N., Mastro, M., Nakra, T. and B. BuSha (2011). *A Low-cost and Unobtrusive System to Measure Emotional Arousal*. Biomedical Engineering Society, Hartford, CT.

Warner-Ault, A., Ault, C., Wolz, U., and T. M. Nakra (2011). *Language Learning through Kinesthetic Interfaces*. Northeast Assoc. for Language Learning Tech., UPenn.

Nakra, T.M. and C. Ault (2008). *WiiConduct – Teaching Classical Music through Interface Design*. NJEdge.Net Conference 5.0.

Nakra, T.M. & R. McMahan (2007). *Student Composers & Sound Designers in the Context of a Game Design Course*. Microsoft Academic Days, Game Dev in CS Educ.

INVITED PRESENTATIONS (selected)

2021 interviewed on Music, Education, & Computer Science podcast anchor.fm/mecs

2021 invited co-presenter, "Creative Futures: Designing Exciting, Innovative and Entrepreneurial Media/Arts Careers Post-COVID" (TCNJ Alumni Engagement)

2021 invited panelist, "What Happened, Miss Simone?" community conversation on inclusion and the arts, Hopewell Valley Regional School District, New Jersey

2021 invited speaker, Georgia Tech Center for Music Tech graduate seminar

2019 panelist, *Embedded Computing & Instrument Design*, Audio Eng. Society, NYC

2019 *Conversation w/Paul Lansky*, In the Groove: A Century of Sound, Sarnoff Coll.

2019 featured speaker, MIT Club of Princeton, *Lessons from the Future*

2018 panel moderator, *Pioneering Play: Women in Game Development and Design*, TCNJ Sarnoff Collection (with Margaret Minsky and Cynthia Solomon)

2017 panelist, *Teaching Elec. Musical Instrument Design*, Audio Eng. Society, NYC

- 2016 panelist, *Structural Stability & Morphogenesis Sympos.*, The New School NYC
- 2015 panelist, MIT Faculty Forum webinar (Alumni Edition), “Music and the Brain”
- 2015 speaker, Monthly Music Hackathon NYC at Spotify
- 2015 speaker, TCNJ faculty workshop Collaborating Across Boundaries to Engage Undergraduates in Computational Thinking (CABECT)
- 2014 invited presenter, *Outcomes from Music, Mind, and Meaning* breakout session, *Reconstructing Beethoven’s Improvisations* symposium, MIT Media Lab
- 2013 speaker, *Collision of Music & Games*, Grassroots Gaming Conf., Drexel U.
- 2013 invited lecture, IEEE Princeton/Central Jersey & DeVry Univ Mathematics Dept
- 2013 speaker, Trenton Computer Festival (and 2012)
- 2013 invited graduate research talk, NYU Music and Audio Research Lab
- 2012 panelist, Council for the Arts at MIT 40th Anniversary meeting
- 2012 panelist, *Technology and Opera Education*, OPERA America Conference
- 2011 invited presenter, *Affective Computing* graduate seminar, MIT Media Laboratory
- 2011 panelist, *Music / MACHINES: 50 Years of Music and Technology at MIT*, with Marvin Minsky, Mary Farbood, and Michael Hawley
- 2009 Carnegie Mellon University, Department of Electrical & Computer Engineering
- 2008 invited presenter, HCI Technology seminar (CS436), Princeton University
- 2008 CrestMuse Symposium, Kwansai Gakuin University, Osaka Japan
- 2008 speaker and panelist, Rencon Session, ICMPC, Sapporo Japan
- 2007 keynote address, New Interfaces for Musical Expression Conference, NYC
- 2006 invited lecture, /@rts (“Slasharts”) series, Princeton University
- 2006 speaker, New York University Music Technology Program graduate seminar
- 2002 Clifton Visiting Artist Talk, Harvard University

TCNJ FACULTY AWARDS

- 2021-2022 Sabbatical award (50% acceptance rate)
- 2020-2021 Support of Scholarly Activities (SOSA) award
- 2020 Arts & Communication Faculty Professional Development award (\$950)
- 2019 Mildred Dahne Award for Department Excellence (during my term as IMM chair)
- 2019 Arts & Communication Faculty Professional Development award (\$1990)
- 2018-2020 Support of Scholarly Activities (SOSA) award
- 2018 Arts & Communication Faculty Professional Development award (\$1820)
- 2017 Arts & Communication Faculty Professional Development award (\$1800)
- 2015-2017 Support of Scholarly Activities (SOSA) award
- 2016 Arts & Communication Faculty Professional Development award (\$1652)
- 2016 Mentored Undergraduate Summer Experience (MUSE) (3 students, 2 faculty)
- 2015 Arts & Communication Faculty Professional Development award (\$1331)
- 2014 Mentored Undergraduate Summer Experience (MUSE) (1 student, 2 faculty)
- 2014 Arts & Communication Faculty Professional Development award (\$1300)
- 2014 AFT Career Development grant for workshop at MIT Media Lab (\$478)

2012-2013 Sabbatical award

2011 Mentored Undergraduate Summer Experience (MUSE) (2 students, 2 faculty)

2010 Mentored Undergraduate Summer Experience (MUSE) project (1 student)

2009-2010 Support of Scholarly Activities (SOSA) award

MUSICAL PERFORMANCES

2000-2005 Assistant Conductor, Boston Modern Orchestra Project - Grammy-award-winning ensemble, "one of this country's finest new-music ensembles" (Allan Kozinn, WSJ). Conducted three works, produced sold-out 2001 concert at Symphony Hall. Assisted recording sessions, concerts in Boston/Tanglewood with Harbison, Berger, Mackey, Machover, et al. Tech support for *Orchestra Tech Fest* (2001) and *Nixon in China* (2004). Performed in premiere of Harbison's "Ulysses," 2003.

2002 Clifton Visiting Artist concert, Harvard's Adams House Pool Theater (sold out)
Bach g minor Violin Sonata lighting system | Affective Carpet

2001 Featured Performer and Producer, "Solo Artists on the Edge" concert at the Somerville Theater, part of the Boston Cyberarts Festival. (SP/RING premiere)

1999 Featured Artist, Boston Cyberarts Festival, performed 3 original compositions for Conductor's Jacket and Affective Carpet in COAXIAL at Middle East Club; performed in events at Computer & DeCordova Museums, featured in NYTimes April 1999.

1996-1998 Featured Performer, *Brain Opera* by Tod Machover; 45-minute digital opera produced at MIT Media Lab. 160 performances at Lincoln Center Summer Fest., Ars Electronica Fest., NexOpera Fest. (Tokyo), European Cultural Capital Celebration, Acarte Festival (Lisbon), Walt Disney World, West Palm Beach, and Sao Paulo. Contributed to instrument design & website direction. Featured in NY Times, LATimes, Le Monde, Newsday, Electronic Musician, Scientific American Frontiers, CNN, CBS, VH1, ORF, FocusTV. (Lincoln Center premiere)

1996 Performer, "Now You See It" Festival, London - presented a solo work of Tod Machover's with Digital Baton at "Hypermusic" concert, South Bank Centre.

1994 Musical Coach, Penn and Teller; assisted in preparation for a mini-opera by Tod Machover. Located a lost song by Paul Dresser (used by Houdini for mind-reading acts), which Debbie Harry recorded and released in 1996.

1993-1994 Assistant to Benjamin Zander & Personnel Manager, Boston Philharmonic.

1992 Music Director, Lowell House Opera (the oldest continually active opera company in New England), conducted six performances of Mozart's *The Magic Flute* with semi-professional cast and orchestra (\$15k budget)

1990-1992 Founder/Director, Harvard-Radcliffe Conductors' Orchestra. Ensemble devoted to training conductors; existed until 1999. Rehearsed & performed classical works, recruited student musicians; coached by local professional conductors.

1990-1991 Music Director and Conductor, two original opera premieres at Harvard: *The Repudiation* by Michael Wartofsky and *Gift of the Magi* by B. Warren

SERVICE

College Leadership

Coordinator, Interdisciplinary Minor in Music Technology, 2020-present
Coordinator, Music Technology area, Depts. of Music & IMM, 2005-present
Member, Department of Interactive Multimedia Personnel Committee, 2015-present
Chair, Department of Interactive Multimedia, 2017-2020
Chair, Assistant Dean Search Committee (School of the Arts & Communication), 2019
Chair, Support of Scholarly Activities Committee, 2016-2017
Chair, TCNJ Department of Art & Art History Faculty Search Committee, 2016
Member, Support of Scholarly Activities Committee, 2015-2018
Member, School of Arts & Communication Instructional Tech. Task Force, 2015-2018
Member, Chief Information Officer Search Committee, 2015
External member, IMM tenure-track faculty search committee, 2015
Faculty Co-chair, Info. Tech. Planning Council, 2012-2015 (member, 2009-2012)
External member, IMM PRC tenure review, 2014
Member, Chief Information Officer Search Committee, 2012
Member, Department of Music Personnel Committee, 2010-2015
Member, School of Arts & Communication Strategic Planning Committee, 2010-2013
Music Technology Symposium Series organizer, 2007-2010
Member, Quantitative Reasoning Advisory Committee, 2006-2010
Co-chair, Faculty Committee to establish the B.A. Program in Music, 2006-2010
Member, Dept. of Music Academic Affairs Committee, 2006-2010 (chair, 2008-2009)

Editorial Positions

Editorial Board, "Forums," College Music Society Journal *Symposium*, 2020-present
Editorial Board, Journal of the Assoc. for Technology in Music Instruct., 2019-present

Membership/Office on Nonprofit Boards

Interviewer for Harvard College (Harvard Alumni Association volunteer), 2015-present
Board of Directors (Secretary), Greater Princeton Youth Orchestra, 2020-present
Founder & Artistic Director, Immersion Music, 501c3 music tech prod. co., 1999-2021
Board of Directors, Hopewell Valley Ed. Foundation, 2013-2021 (secretary 6 years)

Doctoral/Honors Service

Doctoral Committee member, Matthew Prockup, *Data-driven Exploration of Rhythmic Attributes & Style in Music*. Elec. & Computer Engin., Drexel U., 2016
Doctoral General Exam Committee (Technical Area Examiner), Elena Jessop, *The body parametric: abstraction of vocal & physical expression in performance*. Program in Media Arts & Sciences, Dept. of Architecture, MIT, 2012.
Doctoral Committee member, Paul Lehrman, *The history and technology of Ballet mécanique*. Department of Music, Tufts University, 2010.
Honors Examiner (Undergraduate) in Engineering, Swarthmore College, 2009.
Research Advisor to graduate students at RWTH Aachen (Dr. Jan Borchers), 2004-5.

Workshop Organization

Chair, Music, Mind, & Invention Workshop at TCNJ, 2012 (www.tcnj.edu/~mmi)
Advisory Board, Reconstructing Beethoven's Improvisations Symposium, MIT, 2014

Journal/Conference/Press Reviewing and Moderating

Program Committee Member and Reviewer, Audio Mostly Conference 2020, 2021
Moderator, paper/poster sessions, joint National Conf. CMS & ATMI, 2020
Ad Hoc Reviewer, Journal of Visual Languages and Computing 2018
Paper Review Committee, Int. Symp. Music Information Retrieval (ISMIR) 2008-2012
Ad Hoc Reviewer, IEEE Multimedia magazine, December 2011
Book prospectus reviewer, Oxford University Press 2011
Ad Hoc Reviewer, Computer Music Journal 2011 and 2005
Ad Hoc Reviewer, IEEE Transactions on Multimedia Journal 2009
Program Committee, Mathematics and Computation in Music Conference 2013, 2015
Paper Reviewer, Mathematics and Computation in Music Conference 2009, 2011
Paper Committee, International Computer Music Conference 2009
Session Chair, New Interfaces for Musical Expression Conference 2009
Committee, RENCON (Performance Rendering Contest for Computer Systems), Osaka
Ad Hoc Reviewer, ACM Transactions on Applied Perception Journal 2008
Ad Hoc Reviewer, Music Performance Research Journal 2006
Ad Hoc Reviewer, Journal of Music Perception 2003-2007
Paper Reviewer, New Instruments for Musical Expression Conference 2006-2009
New Instruments for Musical Expression Conference Program Committee 2002-2005

TCNJ Student Organization Advising

Association for Music Production and Discussion (AMPD) 2010-present
Jiva South Asian Dance troupe, 2012-present Fencing Club 2018-2020
Am. String Teachers Assoc. (ASTA) 2010-2015 (exc. 2012)
Musician's Network 2012-2014 Contemporary Music Ensemble 2006-2009

High School Adjudication & Teaching

2019 Instructor, TCNJ Pre-College Academy summer Music Technology program
2014 & 2012 Judge, New Jersey Music Teachers Nat. Assoc. composition competition
2019, 2018, 2015, & 2013 Adjudicator, Mercer County Teen Arts Fest large ensembles
2010 VOICES Chorale 23rd Music Composition Contest