

ADAM BOULANGER
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researcher | inventor | clinician

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA
Doctorate in Media Arts and Science, PhD 2010
Thesis: Music, Mind and Health: How Community Change, Diagnosis, and Neuro-rehabilitation can be Targeted During Creative Tasks
Courses: Electrical Engineering, Computer Science, Neuroscience
Focus: New Medical Devices for Cognitive and Physical Rehabilitation
Qualifying Exams: Main area with Tod Machover, Music interfaces, music structure and the brain.
Contextual area with David Small, Designing applications based on cognitive principles.
Technical area with Dr. Gottfried Schlaug, M.D., Ph.D., The neurobiology of music.

Massachusetts Institute of Technology, Cambridge, MA
Master of Science – Hyperinstruments Group, 2006
Thesis: Autism, New Music Technologies and Cognition.
Courses: Computational Cognitive Science, Neural Coding and Perception of Sound, Sensor Technologies, Neural Basis of Learning and Memory.

Harvard University Extension School, Cambridge, MA
Diploma – Premedical Studies, 2004.

Berklee College of Music, Boston, MA
Bachelor of Music – Dual Major, Music Therapy, Music Business, 2004.

GRANTS

Alzheimer's Association + Intel Corporation, Everyday Technologies for Alzheimer's Care, 3-year grant, 250k, 2007-2010.

INVITED TALKS

Berklee College of Music 2012. The Future of Music and Medicine, 2012.
Microsoft Research. Music, Mind and Health, 2010.
TED 2008. Enabling Musical Expression in Profoundly Disabled Individuals (EME), Monterey, CA, 2008. Viewable online via TED, Dan Ellsey.
AARP. Auditory-Visuospatial Assessment for Alzheimer's Disease. Washington, DC, 2008.
Samsung, Corporate design center, Designing interfaces based on cognition. Seoul, South Korea, 2008.
LG, Woomyeon R+D campus, New music interfaces and the MIT Media Lab. Seoul, South Korea, 2008.
Intel, Jones Farm Campus, Auditory-visuospatial assessment with music and subsequent applications. Hillsboro, OR, 2008.
MIT World, What's new at the MIT Media Lab, Cambridge, MA, 2007.
AARP. EME, Boston, MA, 2007.
MIT, Human 2.0, Cambridge, 2007.

EXPERIENCE

Microsoft, Applied Sciences Group, 2012-present.
Visiting Scientist.
Lead biophysical data model development, clinical trials, and patent strategy for multi-touch, tabletop games deployed in a sub-acute physical rehab clinic.

MIT Media Laboratory, Hyperinstruments Group, 2010-present.
Postdoctoral Associate.
Funded by the Yamaha Corporation, the postdoctoral appointment is to further develop several research themes in the area of technology for diagnosis and rehabilitation, translating prior research findings into at-risk communities and documenting efficacy.

MIT Media Laboratory, Hyperinstruments Group, 2004-2010.

Research Assistant.

Research included development of new devices and software, deployment of technology into clinical communities, and the investigation of underlying neurological mechanisms of disease as a platform for new tools.

Tewksbury State Hospital and MIT Media Laboratory, Tewksbury, MA, 2004.

Program Manager.

Developed a clinical program, and novel assessments, in addition to coordinating clinical team and running weekly group interventions to integrate music composing technology into residential, long-term, chronic care physical health unit and lock-down psychiatric unit. Finally, coordinated symphonic performance of patient compositions in culminating hospital and community-wide event.

MIT Media Laboratory, 2004-present.

Liason to sponsor community.

Responsibilities include corporate development, business development, opportunity assessment, commercial strategy recommendation, and product strategy for companies such as Yamaha, Gibson, Philips, Intel, General Electric, Bank Of America, Best Buy, Walmart, Hallmark, British Telecom, Telmex, Mattel, Samsung, LG, AARP, Highlands & Islands, GlaxoSmithKline, *others*

Institute for Music and Neurologic Function, Beth-Abraham Hospital, NY, 2003-2004.

Intern.

Motion tracking system development for sub-acute rehab facilities, mapping patient movement to auditory feedback and assessing functional change.

+technical skills: objective-c, Java, web-development (Js, HTML5), iPhone development, Max/MSP, Jitter, Processing, cSound, gSpeak, signal processing techniques in computer music, rapid prototyping, chemical etching PCB, laser cutter, waterjet routing, vacuum forming, MIG welding, standard wood and machine tools.

PUBLICATIONS

Boulanger A. (2010). Music, Mind and Health: How Community Change, Diagnosis and Neuro-rehabilitation can be Targeted During Creative Tasks.

Boulanger A. (2008). Difficulties in Skill Acquisition and Pervasive Environments, *Proceedings of the 10th Ubicomp 2008 Workshop Programs*, Seoul, South Korea, 205-207.

Boulanger A. (2008). Expressive Gesture Controller for an Individual with Quadriplegia, *Proceedings of the 10th Ubicomp 2008 Adjunct Programs*, 113-116.

Boulanger A. (2006). Autism, New Music Technologies and Cognition. Unpublished master's thesis, Massachusetts Institute of Technology, Cambridge, MA.

Lahav A., Boulanger A., Schlaug G., Saltzman E. (2005). The power of listening: auditory-motor interactions in musical training. *Ann N Y Acad Sci*, 1060, 189-194.

SELECTED PRESS

National Public Radio, *A Composer at the Edge of Sound*, 2008.

WGBH Classical Connections, *Hyperscore at Tewksbury Hospital*, 2008.

WBUR, *Art for therapy's sake*, 2007.

CondéNast's Portfolio.com, *TED Flash: Lessons in Creativity*, 2008.

BusinessWeek.com, *NEXT: Innovation Tools & Trends*, TED, 2008.

Boing-boing, 2008.

Boston Globe, *Humans the Next Version*, 2007.

AARP International, *MIT Media Lab develops intergenerational, therapeutic technologies*, 2007.

LA Times, *Music Soothes and awes – and may help us heal*, 2007.

Boston Globe, *The Health Power of Music*, 2007.

CBS News, *The Power of Serendipity*, 2007.

Boston Globe, *This form of therapy is like music to their ears, software brings music to patients*, 2004.

Public Radio International, *Got the Beat*, 2004.

+various international blog references to projects, performances, and research.

SELECTED WORKS

CogNotes. Multi-month study embedding Alzheimer's assessment in open-ended music creation. Intergenerational mentorship between at-risk seniors and teens. 2012-present.

MusicGrid. Mobile device using an individual's personal audio media to automatically construct early detection Alzheimer's tests. 2008-present.

Auditory-visualspatial Assessment in AD. Testing diagnostic validity of novel auditory-visualspatial tasks within Alzheimer's population. 2007-present.

Enabling Musical Expression in Profoundly Disabled Individuals (EME). Motion tracking and composition mapping software to enable severely physically disabled individuals to express music, in time, with precision and control. 2007.

Sonorous object(touch). Sculpture installation and audio composition, 2007.

Auditory Games to Assess Autism Prognosis. Rhythmic and melodic auditory interfaces constructed to test models of autism cognition and assess behavior change in longitudinal interventions. 2006.

Music training program for fMRI study. Piano learning and assessment software to dissociate auditory and motor learning of non-musicians as part of an fMRI imaging experiment. 2005.

Hyperscore in the Hospital. Integration of music composition software into long-term, chronic care, state hospital, resulting in marked patient improvement, discharge, and community symphonic performance of patient compositions. 2004.

Dependency Structure and Harmonic Analysis. Cognition based statistical model of harmonic structure in western music. 2004.

Rehab Sound Sculptor. Motion tracking + composition interface where stroke victims generate real-time composition using their rehabilitative routine. 2004

Rapid deployment motion tracking in sub-acute rehab facilities. Motion tracking interface to capture and record movement in sub-acute rehab gyms while mapping movement to auditory feedback. 2003.