

# Curriculum Vitae

Miriam Madsen

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Place of Birth: Boston, Massachusetts

## Education

2010	Master's of Engineering	Autism Technologies (Dr. Rosalind Picard)	MIT Media Lab
2009	Bachelor's of Science	Computer Science and Engineering	MIT

## Published Proceedings

Madsen, M., Mahmoud, A., Kashef, Y. "iSET: enabling *in situ* & *post hoc* video labeling." Proceedings of the 11th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS): Pittsburgh, Pennsylvania, USA, October 26-28, 2009. Won 1<sup>st</sup> prize in the Graduate category at the Student Research Competition.

Madsen, M., el Kaliouby, R., Goodwin, M., Picard, R.W. "Technology for Just-In-Time In-Situ Learning of Facial Affect for Persons Diagnosed with an Autism Spectrum Disorder." Proceedings of the 10th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS): Halifax, Canada, October 2008.

Madsen, M.A., Kahana, M.J., Tully, M., Madsen, J.R. "Intermittent Oscillations in Simple Cellular Automata: Computational Models of Seizures and Physiologic Episodic Oscillations." Proceedings of the Society for Neuroscience (SFN): San Diego, California, USA, 2004.

## **Conference Presentations**

Madsen, M., el Kaliouby, R., Eckhardt, M., Goodwin, M., Hoque, M.E., Picard, R.W. "Demonstration: Interactive Social-Emotional Toolkit (iSET)." 3<sup>rd</sup> International Conference on Affective Computing and Intelligent Interaction (ACII): Amsterdam, The Netherlands, September 2009.

Madsen, M.A., Madsen, J.R. "Intermittent Oscillations in Simple Cellular Automata: Computational Models of Seizures and Physiologic Episodic Oscillations." Slide presentation at the Society for Autonomous Neurodynamics (SAND): Quebec, Canada, summer 2007.

## **Conference Posters**

Gupta, S., Gupta, N., Madsen, M. "EASY Alliance: a new standard to enable access to consumer electronics and home appliances (CEHA) by seniors and the disabled." IEEE Accessing the Future conference: Boston, Massachusetts, USA, July 20-21, 2009.

Eckhardt, M., Madsen, M., Kashef, Y., Nasser, A.R. , Hoque, M.E., el Kaliouby, R., Goodwin, M., Picard, R.W. "User-Centered Design of Technology for Just-In-Time, In-Situ Exploration of Facial Affect for Persons on the Autism Spectrum" in the Extended Abstracts of IMFAR 2009: Chicago, Illinois, USA, May 7-9, 2009.

Madsen, M., el Kaliouby, R., Eckhardt, M., Hoque, M.E., Goodwin, M., Picard, R.W. "Lessons from Participatory Design with Adolescents on the Autism Spectrum." CHI '09 Extended Abstracts on human factors in computing systems: Boston, Massachusetts, USA, April 4-9, 2009.

Madsen, M.A., Tully, M., Myers, D., Rimm-Kaufman, A., Kahana, M.J., Madsen, J.R. "Computer Investigation of Oscillations in Simple Cellular Automata: a model of brain activity accessible in secondary school." Proceedings of the Society for Neuroscience (SFN): New Orleans, Louisiana, USA, Fall 2003.

## **Seminars / Talks**

Presentation on MIT autism technologies, at Horace Mann School, Newton, MA. October 2009.

Presentation to Cleveland Clinic Autism Center on MIT autism technologies. October 2009.

Seminar at the Industrial Engineering & Management Department Meeting at the Technion in Haifa, Israel. "Technology for Just-In-Time In-Situ Learning of Facial Affect for Persons Diagnosed with an Autism Spectrum Disorder." July 2008.

Seminar for the students and associates of Professor Anat Rafaeli at the Technion in Haifa, Israel. "Technology for Just-In-Time In-Situ Learning of Facial Affect for Persons Diagnosed with an Autism Spectrum Disorder." July 2008.

## Research Positions

Master's of Engineering degree candidate [formerly Undergraduate Researcher], Affective Computing Group Media Laboratory, MIT  
(September 2007 – Present)

Design, administer, and analyze results of novel behavioral intervention for autistic adolescents designed to introduce natural emotional expressions in a supportive learning environment: <http://iSET.media.mit.edu> . Design and code intuitive user interfaces for illustration of emotion state, using data derived from live video of facial expressions. Introduce user interfaces for testing in clinical/hospital settings with autistic and epileptic children. Explore strategies for seizure prediction using facial video of epileptic pediatric patients at Children's Hospital Boston.

Undergraduate Researcher, Robotics, Vision, and Sensor Networks Group  
Computer Science and Artificial Intelligence Laboratory, MIT  
(February 2009 – September 2009)

Act as Clinical Coordinator for robotic wheelchair design project based primarily at The Boston Home, a long-term residential facility for persons with late-stage multiple sclerosis and similar neurodegenerative conditions. Assist with design of spoken interfaces. Coordinate and advise on design of wheelchair-tracking console for use by TBH nurses. Project website designer: <http://rvsn.csail.mit.edu/wheelchair>

Undergraduate Researcher, Industrial Engineering  
Israeli Institute of Technology (Technion), Haifa, Israel  
Supported by the Paul E. Gray Endowed Fund for UROP. Jay M. Kogan MISTI-Israel intern.  
(June – August 2008)

Developed innovative game for children with Asperger's syndrome to teach strategies for a decision-making task. Also held MISTI Reporter position: traveled around country, collecting stories and photographs about MIT students' internships.

Undergraduate Researcher with Voting Technology Project, Media Laboratory, MIT.  
(October 2006 – May 2007)

Improved touch-screen ballot design using JAVA to enhance the quality of electronic voting for voters; created mock-ups of actual ballots using Flash for tests of whether undervoting is caused by poor ballot design. Collaborated with project team to use human interaction research results for making voting more intuitive; incorporated feedback from experiments to improve ballot quality and usability.

Undergraduate Researcher at Speech and Communications Laboratory, RLE, MIT.  
(January–May 2006)

Created website for an Independent Activities Period linguistics course, "Transcribing Prosodic Structure of Spoken Utterances with ToBI": <http://anita.simmons.edu/~tobi>  
Analyzed speech hand-labeled according to context in sentence using Perl, then wrote programs designed to combine and generate speech labels.

## Teaching Positions

Beginning and Intermediate Hebrew teacher at MIT's Hebrew Study Program (Ulpan).

(February 2009 – present)

Prepare and teach novel fast-paced curriculum on written and spoken beginning Hebrew.

Programming Teacher at the Winsor School. Boston, MA.

(September 2007 – June 2008)

Taught Processing to middle-school girls in popular afterschool program. Created curriculum, gave weekly lectures, organized assistant teaching staff, and maintained course website: <http://theMish.net/winsor>

Programming Instructor in the MIT Computer Science Department.

(January 2008)

Wrote and taught a for-credit 16-hour course in Processing to MIT undergrads and grad students. Created curriculum, presented twice-weekly lectures, assigned & graded homework, and maintained course website: <http://web.mit.edu/mish/processing/> (In 2009 and 2010, taught four-hour crash courses on similar material.)

## Other Employment

Assistive Technology Design Consultant

(June 2010 – present)

Design, create, test, and deploy custom music-creating and communicative technology for a young man with cerebral palsy.

Random Hall Residential Advisor

(June 2009 – August 2009)

Monitored dormitory residents, organized all-dormitory events, and served as dormitory liaison to student life organizations on campus.

Part-time Consultant with MIT International Science and Technology Internships program.

(January 2009 – March 2009)

Evaluated website design and developed suggestions for user interface and student interest improvement. Compiled and edited publicity material from other students.

Collaboration Technologies Intern at the IBM Haifa Research Labs. Haifa, Israel.

(June – August 2007)

Worked with team members to create innovative Web 2.0-style plugin for IBM internal chat client to facilitate semi-persistent group communication about user queries. Designed and coded user interface for Java plugin; emphasized usability & efficiency for improved user experience.

Science Intern with Domain Development Team. ChoiceStream, Inc. Cambridge, MA.  
(June 2006 – March 2007, October 2008 – February 2009)

Compiled initial information on client databases using SQL; incorporated information into data-viewing presentation, using data sets from client-to-customer solicitations. Collected & organized existing product hierarchy data to create internal taxonomy for new customer information.

Math test writer/reviewer at DemiDec. Los Angeles, CA (worked from MA).  
(June 2006 – January 2007, June – August 2008.)

Wrote, edited, and reviewed math tests [through the beginning-calculus level] in Microsoft Word and MathType to prepare high school clients for the US Academic Decathlon.

### **Activities/Leadership**

Red Cross (MIT Chapter) Bone Marrow Registration Drive Coordinator, Blood Drive Volunteer Coordinator, and webmaster, June 2008-present.

Tower Captain in MIT's Guild of Bellringers, May 2006-May 2008, and occasional bellringer, 2005-present.

President of Techiya (MIT Jewish a cappella singing group) from January 2010 to June 2010, and member, February 2007-present.

Steering Committee member in Hibur (Technion/MIT collaboration organization), September 2008-June 2010.

Addir Interfaith Discussion Program member, May 2009-June 2010.

Hillel Vice-President for Shabbat and Holidays, February 2009-January 2010.

EECS dormitory representative, September 2007-August 2009.

Community Catalyst Fellow, 2008-2009.