

# Mojtaba Solgi

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EDUCATION **Ph.D. in Computer Science**, (currently in progress)  
**Michigan State University**, East Lansing, MI

**Graduate Specialization in Cognitive Science**, May 2010  
**Michigan State University**, East Lansing, MI

- *GPA*: 3.96/4.0

**M.S. in Computer Science**, May 2009  
**Michigan State University**, East Lansing, MI

- *GPA*: 3.95/4.0
- *Thesis Topic*: Developmental Stereo: Emergence of Disparity Preference in Computational Models of Visual Cortex
- *Thesis Advisor*: Prof. Juyang Weng

**B.S. in Computer Science**, September 2007  
**Amirkabir University**, Tehran, Iran

- *GPA*: 16.1/20.0
- *Minor*: Software Engineering
- *Project Title*: Cooperative Monitoring Agents for a Car Tracking System
- *Project Advisor*: Prof. M. R. Meybodi

HONORS AND AWARDS Michigan State University

- Summer Graduate Student Support in Cognitive Science, June 2010
- Academic Travel Grant, Graduate School, June 2009
- International Travel Grant, International Studies, June 2009
- Toyota Graduate Research Support, Toyota Research Institute, August 2008 to May 2009
- University Graduate Fellowship, June 2008

Amirkabir University of Technology

- Exceptional students' admission award to M.Sc. program, August 2006
- Honor Student and member of Exceptional Talent Group, September 2002 to September 2007

- World Championship Award, RoboCup2005 Osaka, Japan, 3D Soccer Simulation league, July 2005.

My role in the team included developing learning agents and their cooperation methods.

- World Championship Award, RoboCup2004 Lisbon, Portugal, 3D Soccer Simulation league, July 2004.

My role in the team included programming low-level skills into the simulated robots.

#### Pre-Undergraduate

- Ranked 320 among 200,000 students in national university entrance exam in Iran, 2002
- Ranked 1st in scientific competitions among all students in Hamedan Province, Iran, 1995 and 1994

#### TECHNICAL PROJECTS

- Development of WWSN software package in C++ - a network for recognizing type, location and size of visual objects in complex background. Embodied Intelligence Laboratory, Michigan State University. Fall 2009 to present
- Design and Implementation of MILN2 software package in C++. Embodied Intelligence Laboratory, Michigan State University. Fall 2007 - Spring 2008
- Software Designer & Project Manager, Iran Info-Tech Development Co., 2006-2007
- Design and Implementation of a Q-Learner soccer player agent for intercept skill in Aria Team, 2005
- Design and Implementation of paper-less office software for Iranian National Owghaf Institution, Iran Info-Tech Development Co., 2005

#### RESEARCH EXPERIENCE

**Embodied Intelligence Laboratory**, Department of Computer Science and Engineering, Michigan State University, August 2007 to present

*Advisor:* Prof. Juyang Weng

- Working on biologically inspired neural networks to simulate developing binocular receptive fields, and achieve high disparity detection accuracy in realistic settings. The network is modeled after the 6-layer architecture of the visual cortex and takes into account the temporal aspects of the input.
- Working on Where-What-Size networks; developmental models of the ventral and dorsal pathways that integrate both attention-based recognition and object-based attention in a single network.

- Graduate Research Assistantship, August 2008 to May 2009  
worked under the supervision of Dr. Danil Prokhorov from Toyota Research Institute on the application of computer vision research in autonomous vehicle systems.

**Neuroimaging of Perception and Attention Laboratory**, Department of Psychology, Michigan State University, May 2010 to September 2010

*Advisor:* Dr. Taosheng Liu. Working on neuromorphic models of transfer of training effects in Visual Perceptual Learning. Our model succeeded to replicate and explain the psychophysical data. This work is currently being prepared for publication.

**Undergraduate Research Assistantship,**

Amirkabir University of Technology, October 2003 to December 2006

- Worked under the supervision of Dr. M. Akbari at Robotics Lab, Computer Engineering and IT Department. The research in the laboratory was focused on multi-agent robotic systems and machine learning methods. As a part of this laboratory, I co-founded the Aria team for the 3D RoboCup soccer simulation, which won two world championships.
- Worked under the supervision of Prof. M. Meybodi, Soft Computing Lab, Computer Engineering and IT Department. My work in the lab was focused on cooperative monitoring agents for a Car Tracking System.

SELECTED  
PUBLICATIONS

- **M. Solgi** and J. Weng. “Developmental Stereo: Emergence of Disparity Preference in Models of the Visual Cortex,” *IEEE Transaction on Autonomous Mental Development*, vol. 1, no. 4, pp. 238-252, 2010.
- **M. Solgi** and J. Weng. “Temporal Information as Top-down Context in Binocular Disparity Detection,” In Proc. *IEEE 8th International Conference on Development and Learning*, Shanghai, China, June 4-7, 2009.
- **M. Solgi** and J. Weng. “Developmental Stereo: Topographic Iconic-abstract Map from Top-Down Connection,” In Proc. *Symposia Series “New developments in Neural Networks” of the International Neural Network Society*, Auckland, New Zealand, Nov. 24-25, 2008.
- H. Baghi, **M. Solgi**, H. Izadinia, S. Razizadeh, S. Arefian. “Aria 2006 3D Soccer Simulation Team Description,” In Proc. *RoboCup Symposium 2006*, Bremen, Germany, June 14-20, 2006

- **M. Solgi**, S. Dezfouli, H. Baghi, A. Ghaderi, O. Mola, V. Kazempour, S. Akhondian, H. Montazeri, A. Nickabadi, S. Moradi. “Aria 2005 3D Soccer Simulation Team Descriptio,” In Proc. *RoboCup Symposium 2005*, Osaka, Japan, July 13-19, 2005
- CONFERENCE PRESENTATIONS
- **M. Solgi** and J. Weng. “Temporal Information as Top-down Context in Binocular Disparity Detection,” In Proc. *IEEE 8th International Conference on Development and Learning*, Shanghai, China, June 4-7, 2009.
  - M. Luciw and J. Weng. “Where-What Network-4: The Effect of Multiple Internal Areas,” In Proc. *IEEE 9th International Conference on Development and Learning*, Ann Arbor, MI, USA, August 11-25, 2010.
- SELECTED GRADUATE COURSES
- Machine Learning, Computer Vision, Basic Cognitive Processes, Developmental Vision, Digital Evolution, Artificial Neural Networks, Data Mining, Algorithmic Graph Theory, Sensation and Perception.
- TEACHING EXPERIENCE
- **Graduate Teaching Assistant**, Department of Computer Science and Engineering, Michigan State University  
*Courses:*
    - CSE 440: Introduction to Artificial Intelligence, Fall 2007
    - CSE 450: Translation of Programming Languages, Spring 2008
    - CSE 232: Introduction to Programming II, Fall 2009
  - **Undergraduate Teaching Assistant**, Parand Azad university, Tehran, Iran, Winter 2007  
*Course:* Introduction to Robotics and Artificial Intelligence
- SERVICES
- Serving as site coordinator for Mental Development Repository website (<http://www.mentaldev.org/>). January 2008 to present
  - Served as a member of Technical Committee of RoboCup Soccer Simulation. July 2006 to July 2007
  - Contributed to the development of The RoboCup Soccer Simulator research and educational tool for multi-agent systems.

TECHNICAL  
SKILLS

- *Programming Languages:* Proficient in C/C++, MATLAB, Java, VB.NET, C#.NET, ASP.NET. Familiar with: Python, Prolog, PHP and HTML
- *Operating Systems:* Linux, OS X, and MS-Windows
- *Development Environments:* KDE Integrated Development Environment, .NET, Borland C++ Builder
- *Tools/Libraries:* L<sup>A</sup>T<sub>E</sub>X, Adobe Illustrator, Qt4, Linux automake tools, MATLAB Simulink library, ODE (a physics simulation engine)
- *Database Systems:* Microsoft SQL Server, MySQL.

REFERENCES

- Prof. Juyang Weng, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI 48824, U.S.A.  
Email: weng@cse.msu.edu. Web: <http://www.cse.msu.edu/~weng/>  
Tel: +1 (517) 353-4388
- Dr. Taosheng Liu, Department of Psychology, 289A Psychology Building, Michigan State University, East Lansing, MI 48824, U.S.A.  
Email: tsliu@msu.edu. Web: <http://psychology.msu.edu/LiuLab/>  
Tel: +1 (517) 353-4389
- Mark McCullen, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI 48824, U.S.A.  
Email: mccullen@cse.msu.edu. Web: <http://www.cse.msu.edu/~mccullen/>  
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