Shiwali Mohan

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Education

Doctor of Philosophy in Computer Science *August 2009 - Present*
University of Michigan, Ann Arbor
Areas of Interest: Cognitive Architecture, Grounded Natural Language, Human-Agent Interaction, Machine Learning

Master of Science and Engineering in Computer Science *August 2008 - December 2009*
University of Michigan, Ann Arbor
Relevant Coursework: Introductory/Advanced Artificial Intelligence, Machine Learning, Natural Language Processing, Models of Cognition, Cognitive Functioning, Algorithms, Parallel Computing

Bachelor of Engineering in Instrumentation and Control Engineering *August 2003 - May 2007*
Netaji Subhas Institute of Technology, Delhi University, New Delhi, India

Research Experience

Graduate Student Research Assistant to Professor John E. Laird *August 2010 - Present*
University of Michigan, Ann Arbor
Learning with Human-Agent Interaction
Designed and implemented an interaction model for agents instantiated in Soar cognitive architecture that allows limited mixed-initiative interaction with an instructor. The agents can derived generally applicable procedural knowledge from a history of interactions (available in episodic/semantic memory of the agent) using situated explanation.

Graduate Student Research Assistant to Professor John E. Laird *May 2009 - August 2010*
University of Michigan, Ann Arbor
Reinforcement Learning in Soar Cognitive Architecture
Designed, implemented and analyzed reinforcement learning agents for Infinite Mario. Implemented modular reinforcement learning for Soar cognitive architecture that allows the agent to learn multiple MDPs.

Research Assistant to Professor Niladri Chatterjee *May 2007 - May 2007*
Indian Institute of Technology, New Delhi, India
Sense Disambiguation, Word-Space Models for Language
Designed, implemented and analyzed algorithm for sense disambiguation of homonyms using K-Means clustering and Random Indexing.

Undergraduate Thesis with Professor Niladri Chatterjee *December 2006 - May 2007*
Indian Institute of Technology, New Delhi, India
Single Document Summarization, Word-Space Models for Language

Designed, implemented and analyzed algorithm for single-document summarization using PageRank and Random Indexing.

Publications

Conference Proceedings:

Shiwali Mohan and John Laird. Towards situated, Interactive, Instructable Agents in a Cognitive Architecture. In *Papers from the 2011 AAAI Fall Symposium Series*, 2011

Shiwali Mohan and John Laird. An Object-Oriented approach to reinforcement learning in an action game. In *Proceedings of 7th the Artificial Intelligence for Interactive Digital Entertainment Conference*, AIIDE, 2011

Niladri Chatterjee and Shiwali Mohan. Discovering word senses from text using random indexing. In *Proceedings of the 9th International Conference on Computational linguistics and Intelligent Text Processing*, CICLing, 2008. Best Paper Award

Niladri Chatterjee and Shiwali Mohan. Extraction-based single-document summarization using random indexing. In *Proceeding of the 19th IEEE International Conference on Tools with Artificial Intelligence*, ICTAI, 2007

Short Papers and Extended Abstracts:

Shiwali Mohan and John Laird. Relational reinforcement learning in infinite mario. In *Proceedings of the 24th AAAI Conference on Artificial Intelligence*, AAAI, 2010. *(Extended Abstract)*

Unrefereed publications:

Shiwali Mohan. Classification of executed and imagined motor movement eeg signals. December 2009

Teaching Experience

Graduate Student Instructor — *January 2012 - Present*
EECS 492: Introduction to Artificial Intelligence
University of Michigan

Student — *September 2011 - December 2011*
CHE 580: Teaching Engineering
University of Michigan

Service

2011 *Vice-President*, Computer Science and Engineering Graduate Organization, University of Michigan
Social Chair, Indian Students Association, University of Michigan
Pioneer, EduMentoring - an community to promote collaborative research between graduate students and undergraduate students in India
Mentor, EduMentoring
2010 *DCO Representative*, Computer Science and Engineering Graduate Organization, University of Michigan
Social Chair, Indian Students Association, University of Michigan
2007 *Creative Head*, The Choreography Team, Netaji Subhas Institute of Technology, Delhi
2006 *Volunteer*, The Neighborhood Project, Netaji Subhas Institute of Technology, Delhi
Creative Head, The Choreography Team, Netaji Subhas Institute of Technology, Delhi

Professional Experience

Software Engineer with Strategic Data Services *July 2007 - July 2008*
Yahoo! Research and Development, India
Worked on distributed memory clusters owned by Media Analytics. Implemented feed aggregation (to generate analytic numbers such as page views and click-through rate) for many Yahoo! websites. Implemented better scheduling of I/O and CPU bound processes leading to performance improvement of Media Analytics processes.

Software Intern *May 2006 - July 2006*
Bharat Electronics Limited, India

Software Intern *May 2005 - July 2005*
Central Research Laboratory, India

Technical Skills

Operating Systems:	Linux(Ubuntu/Red Hat), Windows(XP/Vista/7)
Programming Languages:	C/C++, Java, Perl, Soar
Programming IDEs/Editors:	Eclipse, Emacs
Document Markup Language:	LaTeX

Interests and Activities

Technology, Science Trivia
Dance and Choreography, Design, Typography

Miscellaneous

Date of Birth	December 24, 1985
Home Address	1923 Point Lane, Apartment 102, Ann Arbor, Michigan - 48105, USA
Citizenship:	Republic of India
Languages:	Hindi (mother tongue), English (fluent)
Email:	shiwali.mohan@gmail.com

Random

August 2008-
April 2011

Graduate Student at
University of Michigan, Ann Arbor
Natural Language Processing
- Interfaced Soar Cognitive Architecture with SimpleNLG to facilitate English language generation in Soar Agents
- Designed, developed and evaluated Soar agents that could describe their perceptions and generate a commentary of their actions

Machine Learning
- Developed an algorithm to classify EEG waveforms as arising from motor imagery or actual movement

Parallel and Distributed Computing
- Modified, implemented, and analyzed Dijkstra's algorithm for a distributed computing setting using MPI framework
- Analyzed scheduling algorithms implemented for Yahoo! Hadoop-0.20.1 on a experimental cluster, proposed better scheduling of heterogeneous tasks.
- Modified and analyzed ATPG ATALANTA to work with pthreads on a shared memory system

Talks and Presentations

- June 2011: Modular Reinforcement Learning in Soar (talk), 31st Soar Workshop, Ann Arbor, MI
- June 2011: Towards An Architecture for Learning with Instruction (talk), 31st Soar Workshop, Ann Arbor, MI
- July 2010: Relational Reinforcement Learning in Infinite Mario (poster), AAAI 2010 Poster Session, Atlanta, Georgia.
- May 2010: Learning Background Knowledge through Instruction (poster), Computer Science and Engineering, University of Michigan, Ann Arbor.
- May 2010: Learning Background Knowledge through Instruction (link), 30th Soar Workshop, Ann Arbor.
- May 2010: Reinforcement Learning in Infinite Mario (link), 30th Soar Workshop, Ann Arbor.
- July 2009: Learning to Play Mario (link), at the 29th Soar Workshop, Ann Arbor.