

Amir Arsalan Soltani

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165 Cambridgepark Drive #327, Cambridge, MA 02140

SKILLS

AI and ML: Deep Learning, Graphical Models, Bayesian Optimization, Reinforcement Learning*

Technical: PyTorch, Blender, NVIDIA's Flex, TensorFlow*, Pybullet*, MuJoCo*

*some exposure

EDUCATION

State University of New York at Buffalo, Buffalo, New York

December 2015

Master of Science, Computer Science | Concentration: Machine Learning

Islamic Azad University, Najafabab, Iran

May 2012

Bachelor of Science, Computer Software Engineering

Awards: Ranked 19th in the nationwide entrance exam for B.Sc, Distinguished Student Award

WORK EXPERIENCE

Research Assistant, Massachusetts Institute of Technology, Cambridge, MA

April 2016 - Present

PI: Dr. Joshua Tenenbaum, Computational Cognitive Science Lab

- Physics-aware systems for perception and reasoning to endow AI agents with more human-like visual intelligence
 - Built a generative model for 3D shapes (github.com/Amir-Arsalan/Synthesize3DviaDepthOrSil)
 - **First-author paper accepted to CVPR 2017**
 - Composing 3D shape priors with physics priors to recover 3D shapes draped under cloth
 - Giving the ability to imagine new physical scenes for physical commonsense reasoning given a text description
- Endowing robots with the ability to build accurate models of the environment and perform delicate interactions

Research Assistant, State University of New York at Buffalo, Buffalo, NY

September - December 2015

PI: Dr. Venu Govindaraju, Center for Unified Biometrics and Sensors

- Built an LDA-based model to do author name disambiguation for many departments at SUNY at Buffalo
- Modeled battery charging patterns for hundreds of mobile phone users with HMMs to predict optimal recharge time

Webpage Designer and Programmer, Saeed Co, Esfahan, Iran

July - October 2011

- Worked on Esfahan WebGIS using JavaScript, C#, AJAX, HTML and OpenLayers

MANUSCRIPTS IN PREPARATION

Yildirim, I.*, Siegel, M.*, **Soltani, A.****, Chaudhuri, S.** & Tenenbaum, J. "Perceiving Fully Occluded Objects via Physical Simulation"

* and ** indicate equal authorship

PUBLICATIONS

Soltani, A., Huang, H., Wu, J., Kulkarni, T. & Tenenbaum, J. "Synthesizing 3D Shapes via Modeling Multi-View Depth Maps and Silhouettes with Deep Generative Networks", CVPR 2017.

INVITED TALKS

Vision Meets Cognition Workshop, CVPR, Honolulu, HI

July 2017

MIT Vision Seminar, Massachusetts Institute of Technology, Cambridge, MA

October 2017

REVIEWER EXPERIENCE

Reviewer , IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2018
Reviewer , Asian Conference on Computer Vision (ACCV)	2018

PROJECTS

Ongoing - Commonsense Reasoning via Imagining New Physical Scenes (Python, PyTorch, Blender)	2018
<ul style="list-style-type: none">• Generate sequences of actions that give rise to a physical scene that explains the text description of a visual scene	
Ongoing - Building Touch Sensor in Simulation for Shape Perception (Python, PyTorch, Blender)	2018
<ul style="list-style-type: none">• Build a touch sensor in simulation to obtain physical properties of soft and rigid objects for delicate interaction	
Compositional Perception System to Recover 3D Shapes (Python, Torch, PyTorch, Blender, Flex)	2017-2018
<ul style="list-style-type: none">• Built a model-based, compositional perception system for recovering 3D shapes covered by cloth with low sample complexity	
Modeling Multi-view Images to Build a Generative Model for 3D Shapes (Torch)	2016-2017
<ul style="list-style-type: none">• Built a generative model for generic 3D shapes to obtain abstract description of objects to be used for model-building	
Author Name Disambiguation using Latent Dirichlet Allocation (Python)	2015
<ul style="list-style-type: none">• Used LDAs with online inference to assign scientific documents to their authors automatically.	
Simulation of Discharge/Recharge Patterns for Mobile Device Users using HMMs (MATLAB)	2015
<ul style="list-style-type: none">• Built HMMs with a Gaussian mixture model state transition to model recharge/discharge patterns for hundreds of mobile phone users and predict the optimal time for recharge	
Improving Accuracy of Indoor Localization with Kalman Filter (R)	2014
<ul style="list-style-type: none">• Implemented Kalman filters for localization• Improved results described in the paper "Mapping organizational dynamics with body sensor networks" by 5-10%	
Learning Bayesian Networks Structure using Decomposable Scoring Functions (MATLAB)	2014
<ul style="list-style-type: none">• Developed a greedy method to learn Bayesian network structures using decomposable scoring functions(AIC, BIC)	
Modeling and Inference Children Handwritings with Bayesian Networks (MATLAB)	2014
<ul style="list-style-type: none">• Modeled a data set containing cursive and hand-printed hand writings of children attending elementary school, collected over two consecutive years with Bayesian networks• Implemented exact and approximate (MCMC) methods for inference	
DNA Nucleobase Sequence Modeling/Prediction using HMMs (MATLAB)	2014
<ul style="list-style-type: none">• Implemented forward-backward, Viterbi and Baum-Welch algorithms to train a Hidden Markov Model (HMM)• Modeled DNA nucleobase sequences to capture DNA regularities	
Hand-Written Digit Recognition with Neural Networks (MATLAB)	2013
<ul style="list-style-type: none">• Experimented with neural network on MNIST digits data set. Obtained accuracy of ~98.5%	
Regression on Page Relevancy (MATLAB)	2013
<ul style="list-style-type: none">• Experimented with regression models on LETOR 4.0 dataset using Gaussian basis functions	

COMMUNITY SERVICE

Co-Founder , I Am Better, <i>Esfahan, Iran</i>	July 2008 - July 2011
<ul style="list-style-type: none">• Founded an association in Iran to propagate good manners in driving among Iranian people	
Science Teacher , Science is Elementary, <i>Buffalo, NY</i>	July - December 2015
<ul style="list-style-type: none">• Taught science lessons and visualized abstract concepts to students at a local elementary school	