

# ATA MOHSENI

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## Objective:

To apply for full-time data science position where I can contribute to developing innovative data-driven solutions.

## Education

UCSD GSR, Structural Engineering specialization Computational Science and Mathematics (CSME)  
**(GPA: 3.91)** (09/17 – 12/20)

UCSD M.S. Structural Engineering (SE)  
UCSD B.S. Structural Engineering (SE)

**(GPA: 3.85)** (09/16 – 06/17)  
**Cum Laude (GPA: 3.75)** (09/13 – 06/16)

## Experience:

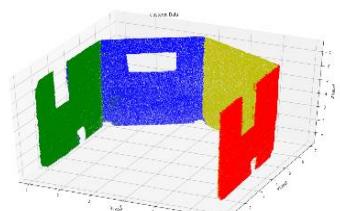
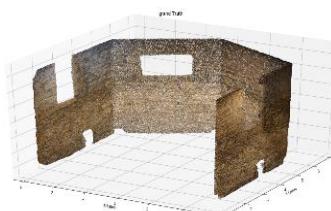
### Graduate Student Researcher UC San Diego:

(09/2017 – 12/2020)

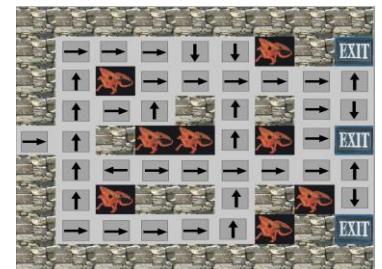
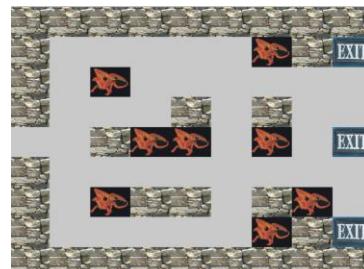
<https://chei.ucsd.edu/>

Related Projects:

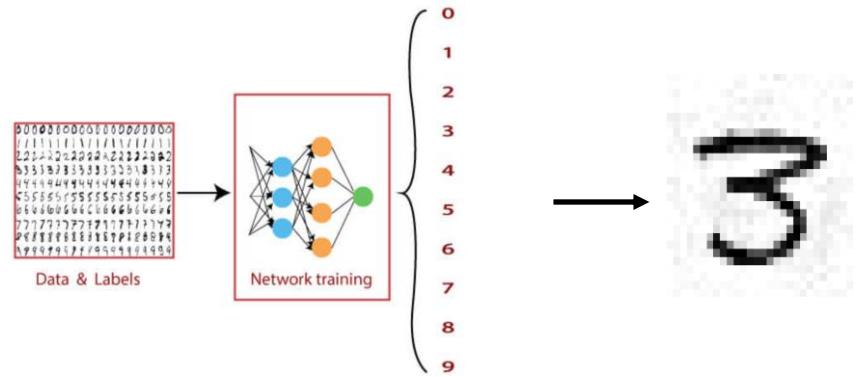
- Implemented and evaluated the self-tuning spectral clustering on large and noisy multi features point sets to perform the material segmentation and building component segmentation.



- Used policy and value iteration methods to find the Optimal Policy for an agent to solve a 9x9 maze



- Generated adversarial examples using gradient ascent on loss function of trained Convolutional Neural Network on MNIST data to improve network classification performance.



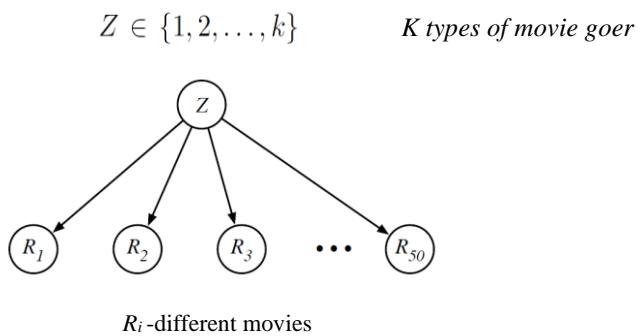
$$\frac{\partial L}{\partial x} = \frac{\partial L}{\partial h^0} = \frac{\partial L}{\partial z^4} \frac{\partial z^4}{\partial h^3} \prod_{i=1}^3 \frac{\partial h^i}{\partial h^{i-1}} = \frac{\partial L}{\partial z^4} \frac{\partial z^4}{\partial h^3} \prod_{i=1}^3 \left( \frac{\partial h^i}{\partial z^i} \frac{\partial z^i}{\partial h^{i-1}} \right)$$

$$z^i = h^{i-1} W^i + b^i \quad \text{for } i = 1, 2, 3, 4$$

$$h^i = \text{ReLU}(z^i) \quad \text{for } i = 1, 2, 3$$

$$p = \text{softmax}(z^4)$$

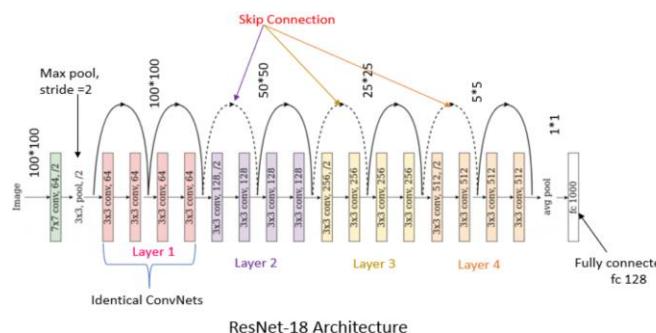
- Created a movie recommendation algorithm for unseen movies based on people's partial movie ratings using EM algorithm (modeled with Knowledge Graphs and Conditional Probabilities Tables)



$$P\left(R_\ell=1 \mid \left\{R_j=r_j^{(t)}\right\}_{j \in \Omega_t}\right) = \sum_{i=1}^k P\left(Z=i \mid \left\{R_j=r_j^{(t)}\right\}_{j \in \Omega_t}\right) P(R_\ell=1 | Z=i) \quad \text{for } \ell \notin \Omega_t.$$

$\Omega_t$  : set of movies seen and rated by  $t^{\text{th}}$  person

- Used Transfer Learning to classify diseases from Chest X-ray image data



num_epochs	3
batch_size	32
learning_rate	0.001
seed	np.random.seed(1)
p_val	0.1
p_test	0.2
optimizer	Adam
criterion	BCEWithLogitsLoss()
network	resnet18
initialization	Xavier
threshold	0.18

## **Graduate Research Assistant at NHERI UC San Diego**

*(Summer 2017)*

- Developed a numerical non-linear finite element dynamic analysis model (used Tcl programming language interacted with open-source finite element software OpenSees) that accurately predicted dynamic earthquake response of a 2-story wood building.

<http://nheritallwood.mines.edu/education.html>

## **Student Engineer at City of San Diego**

*(10/2015 - 07/2016)*

- calculated and updated the cost estimation through the project for construction of a joint trench and conduit in over-ground to underground utility conversion projects
- Evaluated project scheduling conflicts and delivered resolutions to project managers.
- Detailed several traffic design drawings using MicroStation

## **Related Skills**

Python, TensorFlow, PyTorch, MATLAB, R, Tcl, SQL, FEA, Microsoft Office, LaTeX

## **Related Coursework**

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Applied Statistics (MATH 282 A-B)</li><li>• Numerical Optimization (MATH 271A-B-C)</li><li>• Computer Vision (CSE 252A)</li><li>• Probabilistic Reasoning and Learning (CSE250 A)</li><li>• Learning Algorithms (CSE250 B)</li></ul> | <ul style="list-style-type: none"><li>• Neural Networks Pattern Recognition(CSE 253)</li><li>• Machine Learning for Geometric data(CSE 291)</li><li>• Large Scale Optimization (MATH 277A)</li><li>• Reliability &amp; Risk Analysis (SE 224)</li><li>• Stochastic Process (MATH 285)</li></ul> |
|--|---|

## **Honors and Award**

- First place in Tennessee Mathematical Association of Two-Year Colleges state-wide calculus contest.  
*(February 2011)*

<http://volunteerstatecommunitycollege.blogspot.com/2011/01/so-you-think-math-is-hard.html>

## **Affiliations**

- Member of Tau Beta Pi, California Psi. Engineering Honor Society