

ATA MOHSENI

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Objective:

To contribute to building the learning and decision-making pipeline base on intelligent insights from real-world data.

Education

UCSD GSR, Structural Engineering specialization Computational Science and Mathematics (CSME)

(GPA: 3.91) (09/17 – 12/20)

UCSD M.S. Structural Engineering (SE)

(GPA: 3.85) (09/16 – 06/17)

UCSD B.S. Structural Engineering (SE)

Cum Laude (GPA: 3.75) (09/13 – 06/16)

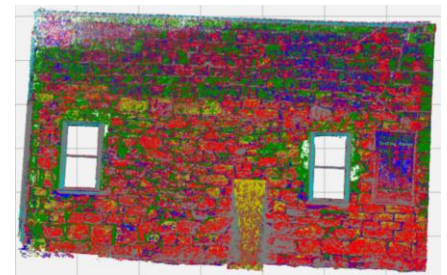
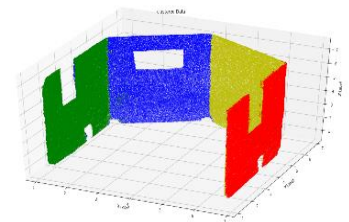
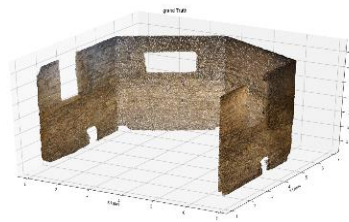
Experience

Graduate Student Researcher UC San Diego:

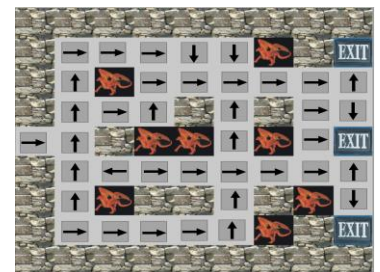
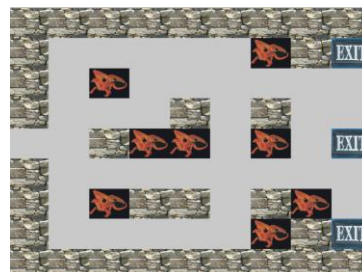
(Fall 2017 –12/20)

<https://chei.ucsd.edu/meet-team/>

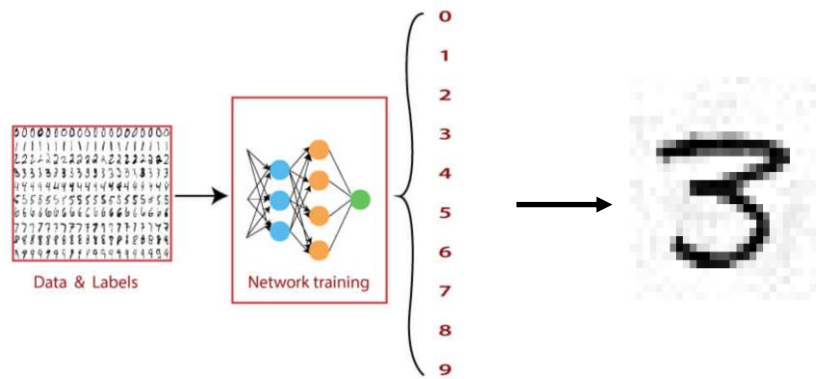
- Implemented and evaluated the self-tuning spectral clustering on large and noisy multi features point sets to perform the material segmentation and building component segmentation. (unsupervised learning)



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



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



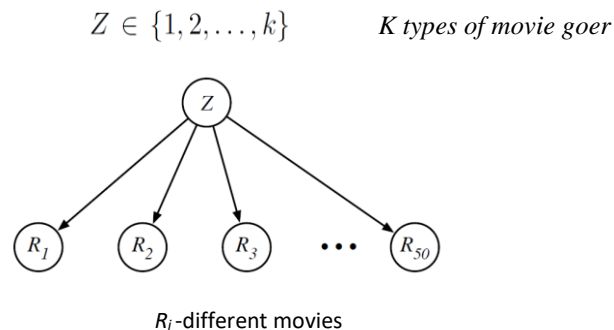
$$\frac{\partial L}{\partial x} = \frac{\partial L}{\partial h^0} = \frac{\partial L}{\partial z^4} \frac{\partial z^4}{\partial h^3} \prod_{i=1}^3 \frac{\partial h^i}{\partial h^{i-1}} = \frac{\partial L}{\partial z^4} \frac{\partial z^4}{\partial h^3} \prod_{i=1}^3 \left(\frac{\partial h^i}{\partial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

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

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

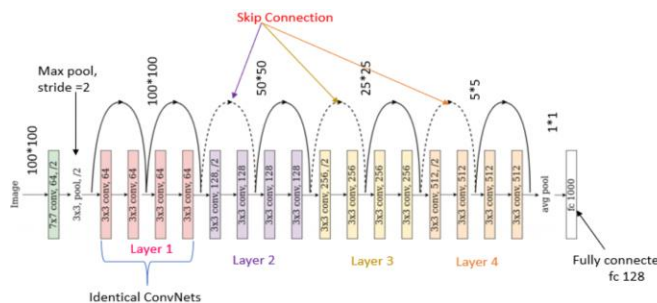
$$p = \text{softmax}(z^4)$$

- Created a movie recommendation algorithm for unseen movies based on people's partial movie ratings using EM algorithm (semi supervised learning)



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

- Used Transfer Learning to classify diseases from Chest X-ray image data (supervised learning)



ResNet-18 Architecture

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: UC San Diego full-scale Earthquake Testing Center (*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>

Related Skills

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

Related Coursework

- Applied Statistics (MATH 282 A-B)
- Numerical Optimization (MATH 271A-B-C)
- Computer Vision (CSE 252A)
- Probabilistic Reasoning and Learning (CSE250 A)
- Learning Algorithms (CSE250 B)
- Neural Networks Pattern Recognition(CSE 253)
- Machine Learning for Geometric data(CSE 291)
- Large Scale Optimization (MATH 277A)
- Reliability & Risk Analysis (SE 224)
- Stochastic Process (MATH 285)

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>