Jimmy Shen

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Summary

Creative and hands-on machine learning and deep learning researcher/engineer. 1) Developed an advanced real-time 2D/3D object detection system performing 2+ times faster inference speed based on SUN-RGBD datasets. 2) Working on the urgent new drug discovery project for COVID 19 by using graph neural networks and semi-supervised machine learning. 3) Built an end to end deep learning-based 2D video understanding system for Google which replaced the traditional one. 3) Strong knowledge in Finical Engineering by taking advanced quantitative analysis courses such as Stochastic Calculus, Machine Learning in Quant Finance, and Finance for Scientists. 4) Publications in top-tier computer vision conference. Passionate at machine learning technologies including both theories and applications. 1) Have a deep understanding of the traditional learning theory (PAC and VC dimension) and actively explore the deep learning-based learning theory from the latest research papers. 2) Have a deep understanding of CNNs, LSTM, GAN, and graph neural networks. 3) Hands-on experience in deep learning frameworks such as TensorFlow and PyTorch. 4) Hands-on experience in training deep learning models by using both Google and AWS's GPU cloud instances. Advanced programming skills in both Python and C++. Top 3% Leetcode coder (global rank of 2,507 out of 92,554 based on the Leetcode contest). Strong collaboration and communication skills.

Technical Skills

Python(> 60 K loc), C++(> 10 K loc), JavaScript, R, SQL, D3, Tensorflow, Pytorch, DGL, AWS, Machine Learning, Deep Learning, Financial engineering, Data Visualization, Algorithms, Multi-Threads, Linux/Unix, Git.

Education

The Graduate Center, City University of New York   *New York, USA*

PH.D., COMPUTER SCIENCE, GPA: 3.64/4.00   *08/2014 – 8/2020 (expected)*

Beijing Technology & Business University   *Beijing China*

BACHELOR OF ENGINEERING, INFORMATION ENGINEERING   *09/2003 – 07/2007*

Work Experience

Google   *Pittsburgh, PA*

SOFTWARE ENGINEER INTERNSHIP   *05/2018 - 08/2018*

- **Predicted critical events based on a large video dataset by using 3D CNN and Bidirectional LSTM**.
- Parallelly train networks under google's cloud computing system to search the best model and algorithm.
- Parallelly pre-processed more than 80M frames high-resolution videos by using google's distributed system.
- Visualized video prediction results to demonstrate the performance of the system
- Key skills used: Python, C++, Multi-Threads, Deep learning, TensorFlow, Distributed Computing, Model searching, Data Visualization.

Philips North American Research   *Cambridge, MA*

DEEP LEARNING & SOFTWARE ENGINEER INTERNSHIP   *05/2017 - 08/2017*

- **Using deep convolutional neural network to analyze intersection videos**.
- Interesting objects are tracked based on 2D object detection/semantic segmentation results. Behaviors of those objects are further analyzed to predict critical events.
- The model is trained based on the AWS EC2 P2 GPU instance.
- Key skills used: Python, Machine Learning, Deep learning, MXNet, Data Visualization.

Huawei Technologies   *Shanghai, China*

ALGORITHM ENGINEER   *07/2007 - 06/2011*

- **Designed three algorithms for Huawei's commercial wireless LTE system**: One was used to reduce the system power consumption, one was used to maintain the connection between network and smartphones and the last one was used to predict system failures and fix failures once detected.
- Simulated and analyzed performances of designed algorithms under different application scenarios.
- Key skills used: Algorithm design, Simulation, C++.

Academic Experience

The Graduate Center, CUNY   *New York, NY*

MACHINE/DEEP LEARNING RESEARCHER   *03/2020 - now*

- **Developing new drugs for COVID-19 by using semi-supervised machine learning and Graph Neural Network (GNN)**: I have participated in Professor Lei Xie's Computational Biology Lab to work on an urgent project which is using the GNN to help discover new drugs for COVID-19
- Key skills used: Graph Neural Network, Python, PyTorch, Deep Graph Library, Semi-supervise learning.

The Graduate Center, CUNY   *New York, NY*

DATA VISUALIZATION RESEARCHER   *03/2020 - now*

- **Social media data Visualization and Analysis**: Work with Dr. Lev Manovich in his Cultural Analytics Lab of Graduate Center of CUNY to analysis the social media data by using machine learning and graph neural networks.
- Key skills used: Graph Neural Network, Python, Data Visualization.

The Graduate Center, CUNY   *New York, NY*

MACHINE/DEEP LEARNING RESEARCHER   *08/2019 - now*

- Have developed a **3D object segmentation system by using Conditional Generative Adversarial Nets** based on 3D voxelized images generated from SUN RGBD dataset. The segmentation results are further fed to a 3D detection framework to finalize 3D object detection.
- Key skills used: Python, C++, Instance Segmentation, Tensorflow, Deep Learning.

The Graduate Center, CUNY   *New York, NY*

MACHINE/DEEP LEARNING RESEARCHER   *08/2017 - 08/2019*

- Have developed an end to end **2D/3D object detection system** based on a novel deep learning framework. The system is designed to process both the outdoor KITTI dataset and the indoor SUNRGBD dataset. The system processes 20 frames per second 3D object detection with comparable detection results to the state-of-the-art, achieving a 2x + speedup.
- Using both GPU machine instance from google cloud and local Nvidia V100/TiTAN GPUs to train the network.
- Key skills used: Python, C++, Deep Learning, Tensorflow, Algorithm Design, Data Visualization.

The Graduate Center, CUNY   *New York, NY*

RESEARCH ASSISTANT   *08/2014- 08/2017*

- **Classify 3D objects** by using NN, SVM and low rand approximation algorithm based on 3D cloud point images.
- Key skills used: Python, Machine Learning.

Publications and Patents

Frustum VoxNet for 3D object detection from RGB-D or Depth images, **Xiaoke Shen**, Ioannis Stamos, WACV 2020.
A Survey of Object Classification and Detection based on 2D/3D Images, **Xiaoke Shen**, arXiv 2019.
Method and device for reducing handover signaling, Jihai Han, **Xiaoke Shen**, 2016.
Adaptive particle filtering in data assimilation of wildfire spread simulation, Gu, F., Butt, M., Ai, C.,**Shen, X.**, and Xiao, J., 2015 Summer Simulation Multi-Conference, 159-168, 2015

Selected School Projects

SENTIMENT ANALYSIS OF FINANCIAL ARTICLES

- Annotated financial articles downloaded from seeking alpha.
- Used Naive Bayes and SVM to train and predict the sentiment of financial articles.

TWITTER POSTING VISUALIZATION

- Visualized and analyzed the twitter posting from 8 cities by using Python and R.

CURSE OF DIMENSIONALITY

- Simulated the performance of distance-based machine learning algorithms' performance when increasing the data dimension.
- Have a deep understanding of *Curse of Dimensionality* in machine learning.