Yushi **LAN**

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Education

Beijing University of Posts and Telecommunications(BUPT)

Beijing, China

B.E. in Software Engineering, Institute of Software

Aug. 2016 - PRESENT

- Major GPA: 3.85, Overall GPA: 3.80
- ***Course Highlights:*** Advanced Mathematics(93), Discrete mathematics(90), Data Mining(93), Distributed Computing(90), Computer Networks(92), Algorithms and Data Structure(89, top 3 in class), Electronic Commerce(94), Python Programming(90), C# Programming(100, first in class), Programming Practice with C/C++(96, first in class), Domain-Oriented Practice(98, first in class)

YePeiDa Innovation College, BUPT

Beijing, China

Elite Selection and Development program(Top 1% among 3600 undergraduates)

Mar. 2018 - June. 2019

- Specialized in pattern recognition, invasion detection and data mining research in industry 4.0 field

Wolfson College, University of Cambridge

Cambridge, United Kingdom

BUPT - Cambridge Exchange Program, (top 36 among 3600 undergraduates)

Summer. 2018

RESEARCHES

Deep Learning to Segment Cell and Tissue Microscopy | Research assistant

U.S.A

Advised by **Prof. Chandrajit Bajaj, CVC Lab, The University of Texas at Austin**

July. 2019 - Oct.

- Aimed to segment microscopy organelles and biopsy cells correctly, which suffer from class imbalance and limited dataset; that had long been a challenge in semantic segmentation and classification problem.
- Analyzed the distribution, size variation of organelles based on microscopy slides, and built datasets for training. Implemented encoder-decoder networks and attention module in PyTorch, added organelle statistical distribution as extra training supervision.
- Combined Augmented Neural-ODE with our segmentation network to ease detail lost and memory cost. We planned to submit our paper to CVPR 2020.

CV aided Cardiomyopathy Pathological Classification | Research Assistant

Beijing

Advised by **Assistant Prof. Hairong LV, National Laboratory of Information, Tsinghua University**

Oct. 2018 - PRESENT

- Aimed to classify cardiomyopathy by digital pathological analysis rather than through observation, and provided reference for future pathological diagnosis.
- Analyzed large quantities of RCM (Restrictive Cardiomyopathy) pathological stained (H&E, MASSON) slides using computer vision algorithms. Extracted valuable features and made correlation analysis and unsupervised cluster based on the results.
- Implemented a GUI system independently that can read, process and analyze pathological slides in parallel. Extracted cardio features and statistical information can be directly saved to excel for later use .
- This research can aid doctors to efficiently classify and diagnose cardiomyopathy with over 85% accuracy.

Dynamic Graph Convolution Networks Discovery | Research Assistant

Beijing

Advised by **Assistant Prof. Yingxia Shao, Intelligent Data Management Group, BUPT**

Sept. 2019 - PRESENT

- Conducted research on theory and development of graph convolution networks, read papers and related materials. Collected related dataset for training and evaluation.
- Implemented different types of dynamic graph convolution network with PyTorch, and then evaluated them on popular sequence dataset. We combined graph convolution with recurrent model to capture the dynamism of graph sequence.

PROFESSIONAL

SenseTime Group Ltd, Research Institute

Beijing, China

Computer Vision Research Intern

March. 2019 - PRESENT

- Body misalignment and domain gap in person re-identification have long been a serious problem and haven't been solved till this day. My research here is focused on solving domain adaptation problem with part-based and semantic-aided CNN models. Our research and model supported ten million level person classification and retrieval with high mean average precision.
- Adjusted and improved CNN model by adding pedestrian segmentation and attributes prediction branches to ease body misalignment problem. The CNN model was trained on a million scale datasets and achieved evident performance improvement.
- Applied segmentation mask to a new prediction branch,and dynamically masked pedestrian semantic feature map after layer4 of Resnet; I further improve the robust feature representation learning compared to *Batch DropBlock Network*.

China Unicom Xiongan Industrial Internet Co Ltd, Internet Department *Xiongan, China*

Summer Intern *July. 2018 - Sept. 2018*

- Engaged in the maintenance of communication based station and server cluster; Assured the stable operation of the carrier communication system.
- Aided the experts in improving the measurement of base station height. The proposed new method will significantly improve the accuracy and reduce the difficulty of measurements.
- Contributed to the patent application regarding this research. Our application was recently accepted: Patent Number: ZL 201910741663.1 "A base station height measurement method, electrical equipment and storage medium"

PROJECTS

An Implementation of Deep Learning Framework with C#

Team Leader *Dec. 2018 - Jan. 2019*

- Implemented a Neutral Network Framework using C# which can build and run artificial neural network in PyTorch way. This framework does not need third party package integration and can run 2 times faster than PyTorch(CPU version) under the same baseline.
- Implemented auto differentiation for popular activation function, matrix calculation and loss function independently. This project is a suitable, easy and intuitive tutorial for introduction to basic deep learning theory.
- Code available here on GitHub

End-to-End Person Re-identification(REID) System Development

Core Member, advised by Prof. Guoshi WU *Sept. 2017 - June. 2019*

- Built an end-to-end person re-identification(REID) system that supported efficient retrieval and distributed deployment. This application can help enterprises understand their customer's interests better from their tracks, and has already been deployed.
- Implemented and integrated several modules together that supported media upload and download, person search and tracking, anomaly detection and correlation analysis etc.
- Designed and adjusted convolution neutral network structure based on ResNet and fine-tuned our model on several datasets to minimize domain gap and improve performance. Achieved 91% Top1-Acc and 75% mAP on Market1501 Dataset.
- Font end code available here on GitHub.

Professional skills

Programming Python, C/C++/C#, Matlab, Linux, Ubuntu, Java, HTML, JavaScript, SQL, LaTeX
Framework PyTorch, Numpy, SciPy, OpenCV, Hadoop
Languages Chinese(native), English
Tofel 102 (Reading 23, Listening 26, Speaking 25, Writing 28)
GRE 324 (Verbal 154, Quant 170, Writing 3.5)

Honors & Awards

2016-2019 **Academic Outstanding Scholarship,** Top 6% of BUPT for 3 consecutive years *Beijing, China*
2019 **National Award,** BUPT Undergraduate Research Innovative Projects (top 2%) *Beijing, China*
2018 **Finalist,** China College Student's Innovation Competition(top 5%) *Beijing, China*
2017 **Scholarship,** Ansheng.WANG Foundation Elite Award(top %5) *Beijing, China*