XIN WANG

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EDUCATION

Fudan University Shanghai, P.R. China
B.Eng. in Electronic Engineering Sept. 2016 – Jun. 2020

- Major GPA: 3.9/4.0 (top ~1.25%), Overall GPA: 3.8/4.0 (rank 4/84)
- GRE: 332 (V 162, Q 170) + 3.5, TOEFL: 109
- Selected Awards:
  - Top 10 Students in the School of Information Science and Technology (top 1.3% of ~760 students)
  - First Prize Scholarship in Fudan University (twice; top 3% of ~13,000 students)

RESEARCH INTERESTS

My research interests include biomedical image analysis and machine learning, with an emphasis on image segmentation and reconstruction. I also have great passion and research experience on probabilistic modeling, mathematical statistics, optimization, and traditional image processing algorithms.

EXPERIENCE

University of North Carolina at Chapel Hill (Department of Radiology) Chapel Hill, USA
Summer Researcher under Professor Dinggang Shen Jul. 2019 – Sept. 2019
Vertebra Localization and Segmentation

- Participated in a challenge set by MICCAI 2019, aiming to localize and segment 24 vertebrae from a limited number of 3D CT scans that involve various challenges such as scoliotic spines, metal insertions and highly restrictive FOVs
- Implemented a Single Shot MultiBox Detector, an object detection network, to detect the whole spine
- Implemented a Butterfly-like network, sagittal and coronal projections of CT scans as inputs, to localize vertebrae, with an identification rate of 83% on the validation set
- Implemented a 3D U-net to segment each vertebra according to the localization results, with a dice coefficient of 78% on the validation set
- Wrote canonical and compact deep learning programs using PyTorch (the code is now available on my GitHub page *github.com/lsDrizzle/Btrfly-Net-Pytorch*)
- Discussed with an author of a related paper, pointed out several mistakes in it, and received the author's acknowledgement

Fudan University (Department of Electronic Engineering) Shanghai, P.R. China
Research Assistant under Prof. Jinhua Yu, Biomedical Imaging Lab Jun. 2018 – Jun. 2019
3D Reconstruction of Angiography and Aneurysm Detection

- Trained in biomedical imaging and deep learning, including traditional image processing algorithms, machine learning and convolutional neural networks
- Used Filtered Back-projection and Simultaneous Iterative Reconstruction Technique (SIRT) to reconstruct 3D images of 2D angiography, and wrote a GUI application to visualize the results
- Implemented a Fully Convolutional Network, image registration algorithms and a Blob filter to detect aneurysms and estimate the risk of rupture

Massachusetts Institute of Technology Boston, USA
Member of Team Fudan-CHINA Oct. 2018
International Genetically Engineered Machine Competition (iGEM)

- Prepared for event through intensive interdisciplinary training in computer science, medicine and biology for 6 months
- Developed paper writing and teamwork skills when conducting scientific research in English

- Originated machine learning, mathematical optimization, differential equation, stochastic process models to improve the performance of a synthetic signal transducer system on cell membranes, and wrote a report detailing the modeling
- Designed webpages to illustrate our work (see, for example, our webpage for the modeling: *2018.igem.org/Team:Fudan-CHINA/Model*)
- Delivered a formal presentation in Boston, and obtained a bronze medal

Fudan University Shanghai, P.R. China
China Undergraduate Mathematical Contest in Modeling Sept. 2017

- Prepared for event through training on academic knowledge including probability theory, mathematical statistics, and machine learning
- Developed professional skills including modeling and using scientific tools such as Python, MATLAB and Mathematica during the event
- Used cluster analysis, the genetic algorithm and a decision tree to examine the best pricing strategy of a membership app, and used Bayesian estimation to forecast returns
- Was part of the only sophomore team that obtained the first prize in the Shanghai Division

SELECTED AWARDS AND HONORS

- Top 10 Students in the School of Information Science and Technology (top 1.3% of ~760 students) 2019
- Outstanding Student in Fudan University (top 5% of ~13,000 students) 2019
- First Prize Scholarship in Fudan University (top 3% of ~13,000 students) 2018
- Bronze Medal in International Genetically Engineered Machine Competition 2018
- Honorable Mention in Interdisciplinary Contest in Modeling (top ~20% of ~10,000 teams) 2018
- First Prize Scholarship in Fudan University (top 3% of ~13,000 students) 2017
- Selected to the Elite Engineer Program in Fudan University based on outstanding research performance (top 5% of ~350 students) 2017
- First Prize in China Undergraduate Mathematical Contest in Modeling (top 5% of ~1,000 teams) 2017

ADDITIONAL INFORMATION

Selected Projects

- Implemented a video stabilization algorithm using Fast Retina Keypoint (FREAK, a feature detection and matching algorithm), a hidden Markov model and a Kalman filter
- Trained a voiceprint recognition model using a recurrent neural network
- Implemented a JPEG 2000 image compression algorithm based on information theory

Computer Skills and Methods

- PyTorch, Linux, Python, MATLAB, C++, Mathematica, JavaScript
- Machine learning, convolutional neural network, *convex optimization (currently learning)*
- Data structure, computer architecture, digital image processing, signal processing
- Mathematical statistics, random processes, information theory