Siyuan Shan

1600 Baity Hill Dr 311A, Chapel Hill, NC, USA

919-537-6515 siyuanshan@cs.unc.edu

RESEARCH INTERESTS: Machine Learning

ADVISOR: Junier Bárbaro Oliva

EDUCATION

UNC at Chapel Hill — **Computer Science** — **Doctor of Philosophy**

Machine Learning — Aug 2018 - now

Beihang University — **Biomedical Engineering** — **Bachelor**

GPA: 3.91/4 Ranking: 1/55 — Biomedical Informatics & Electronics — Sep 2013 - Jun 2017

Czech Technical University — **Electrical Engineering** — **Exchange Student**

Outstanding Undergraduate Student Exchange Program Funded by CSC — Sep 2015 - Feb 2016

EXPERIENCE

Research Intern at ByteDance, Mountain View May 2020 - Aug 2020 Advisor: Dr.Jitong Chen

- Extending GANSynth for semantic music generation.

Graduate Research, Chapel Hill Jan 2019 - now Advisor: Dr.Junier Bárbaro Oliva

- Developing a meta learning framework to achieve better supervised learning performance.
- The model is a combination of parametric methods and non-parametric methods.
- The model effective improve classification accuracy and regression performance across several benchmark datasets.

Graduate Research, Chapel Hill Sep 2018 - Dec 2018 Advisor: Dr.Dinggang Shen

- Developing better medical image registration methods using generative adversarial loss.
- Using a topology preserving loss to regularize the Jacobian matrix of deformation filed.
- The method is applied on MRI 3D brain images to prove its effectiveness.

Undergraduate Research, Beijing Oct 2016 - Jun 2017 Advisor: Dr.Yan Xu (MSRA)

- Working on a project of medical image registration using fully-convolutional networks
- The network is optimized with regards to an innovative unsupervised loss function
- An ROI segmentation module is introduced to the network to improve registration performance
- The proposed method achieves state-of-the-art results on 2D liver/brain registration while maintaining a high inference speed compared to traditional registration algorithms

Undergraduate Research, Beijing Apr 2016 - Oct 2016 Advisor: Dr.Yan Xu (MSRA)

- Working on a project of automatic localization and recognition of video subtitles
- Subtitle positions and the single character width are simultaneously determined by a statistical method
- A CNN ensemble is trained on a synthetic dataset for character detection and recognition
- The proposed system achieves state-of-the-art performance on videos in East Asian languages

PUBLICATIONS

- **Siyuan Shan**, Yang Li, Junier B. Oliva, Meta-Neighborhoods. *NeurIPS, 2020*.
- Yang Li, Haidong Yi, Christopher M. Bender, **Siyuan Shan**, Junier B. Oliva, Exchangeable Neural ODE for Set Modeling. *NeurIPS, 2020.*
- Meijun Liu, Jicong Zhang, Wenxiao Jia, Qi Chang, **Siyuan Shan**, Yegang Hu, Dangxiao Wang, Enhanced Executive Attention Efficiency after Adaptive Force Control Training: Behavioural and Physiological Results. *Behavioural Brain Research, 2019.*
- **Siyuan Shan**, Xiaoqing Guo, Wen Yan, Eric I-Chao Chang, Yubo Fan and Yan Xu, Unsupervised End-to-end Learning for Deformable Medical Image Registration. *Arxiv, 2017.*
- Yan Xu, **Siyuan Shan**, Ziming Qiu, Zhipeng Jia, Zhengyang Shen, Yipei Wang, Mengfei Shi, Eric I-Chao Chang, End-to-End Subtitle Detection and Recognition for Videos in East Asian Languages via CNN Ensemble. *Signal Processing: Image Communication, 2017.*

ACTIVITIES

- Reviewer for NeurIPS 2019 Workshop on Sets & Partitions
- Ranked 3/558 (top 1%) in Kaggle Freesound General-Purpose Audio Tagging Challenge

SKILLS

- Programming Language: Python, MATLAB, C/C++, Latex
- Computation Tools: Caffe, Tensorflow, PyTorch
- English: TOEFL iBT: 111

AWARDS

- Outstanding Graduates of Beihang University 2017
- First-Class Scholarship of Academic Excellence 2015, 2016
- National Scholarship 2015
- First Prize in Beihang University Physics Competition 2014
- Third Prize in Beihang University Mathematics Competition 2014

Courses Taken at UNC

- COMP 633: Parallel and Distributed Computing Fall, 2018
- COMP 776: Computer Vision of Our 3D World Fall, 2018
- COMP 991: Reading and Research Fall, 2018
- COMP 455: Models of Language and Computation Spring, 2019
- COMP 662: Scientific Computation II Spring, 2019
- COMP 991: Reading and Research Spring, 2019