Mr. Xianpeng Liu

+1 (984) 218-7386 | xliu59@ncsu.edu | Website | Linkedin | Google Scholar

Education

North Carolina State University — Raleigh, NC, USA
Ph.D. Candidate in Electrical Engineering — *Aug. 2018 – Present*
Research Interests: Computer Vision, Machine Learning, Data Science — ***Expect Graduate: 2023 Spring***

Harbin Institute of Technology — Harbin, Heilongjiang, China
M.S. in Materials Processing Engineering — *Aug. 2016 – July 2018*

Harbin Institute of Technology — Harbin, Heilongjiang, China
*B.Eng. in Welding Science and Technology, Honors School** — *Aug. 2012 – July 2016*
For* ***top 5%* *students selected according to National College Entrance Examination*

Technical Skills

Programming: Python, C/C++, Matlab, JavaScript, HTML/CSS, SQL
Framework: Pytorch, Tensorflow, Keras, MMdetection, MMdetection3d, Detectron2, Numpy, Pandas
Developer Tools: Git, VS Code, Visual Studio, PyCharm, IntelliJ

Research Experience

Research Assistant on Computer Vision and Deep Learning — Jan. 2020 – Present
Laboratory for interpretable Visual Modeling, Computing and Learning (iVMCL), NCSU — *Raleigh, NC*

- ***Learning Auxiliary Monocular Contexts Helps Monocular 3D Object Detection (AAAI'2022, acceptance rate: 15%)***
  - Proposed a new monocular 3D detection algorithm by learning auxiliary monocular contexts. It achieved new state of the art (SOTA) performance on the KITTI benchmark, outperforming prior arts by large margin.

Research Assistant on Machine Learning — Aug. 2018 – Dec. 2019
Dr. Chau-Wai Wong's Research Group, NCSU — *Raleigh, NC*

- ***Toward Effective Automated Content Analysis via Crowdsourcing (ICME'2021, acceptance rate: 30%)***
  - Proposed a big data collection&labelling system for sentiment/emotion analysis of tweets in various crises. The system is implemented via crowdsourcing, i.e. Amazon Mechanical Turk, using Javascript, HTML/CSS and SQL
- ***Video-Based Wetting Detection for Blended Fabrics (Asilomar'2019)***
  - Proposed a wetting detection algorithm based on pixel value gradients in fabric blending videos. The detection algorithm has high recall on wet fabrics and is robust to pixel noise and camera shake

Related Publications

Conference Proceedings

- **Xianpeng Liu**, Nan Xue, Tianfu Wu. "Learning Auxiliary Monocular Contexts Helps Monocular 3D Object Detection", *AAAI 2022 (acceptance rate: 15%).*
- J.L. Wu, C.-W. Wong, X.Y. Zhao, **X.P. Liu**. "Toward Effective Automated Content Analysis via Crowdsourcing", IEEE International Conference on Multimedia and Expo (ICME) 2021. (acceptance rate: 30%) [PDF]
- **Xianpeng Liu**, C.-W. Wong, "Video-based wetting detection for blended fabrics", 2019 53rd Asilomar Conference on Signals, Systems, and Computers, 89-93. [PDF] [Demo]

Course Projects

Body-Rocking Behavior Recognition| *Active Robotic Sensing (ARoS) Laboratory, NCSU* Feb. 2019 – May 2019
- Using 1-D time series data captured from an IMU sensor as input, implemented a CNN-LSTM detector for detecting body-rocking behavior. Achieved the best performance (1/14) in the course.

Visual Terrain Identification with Uncertainty Quantification| *ARoS Laboratory* Feb. 2019 – May 2019
- Explored using Bayesian deep neural networks to identify terrains in videos. The implemented network not only has the ability to recognize the terrains in each frame, but also can output the uncertainty quantification of each prediction.