ZHENGYANG SHEN

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SUMMARY

I am a fifth-year Ph. D student working on medical image analysis, computer vision, computer graphics, and geometry processing. My advisor is Marc Niethammer. For computer vision tasks, I develop a scientific image registration toolkit [Mermaid] and a general 3D medical image processing package [EasyReg]. For computer graphics tasks, I develop a shape processing toolkit [ShapMagn].

EDUCATION

University of North Carolina at Chapel Hill, NC   *09/2017 - Present*
Ph.D. candidate, Computer Science
Beihang University, Beijing, China   *09/2012 - 07/2016*
Bachelor in Biomedical Engineering

EXPERIENCE

Research Assistant, University of North Carolina at Chapel Hill   *09/2017 - Present*
Advisor: Marc Niethammer

- Fluid-based image registration [link].
- Large scale point cloud registration and landmark detection [link].

Research Intern, Facebook Reality Lab   *05/2021 - Present*
Host: Laura Trutoiu

- 3D facial geometry processing
  (frame fitment, 3D landmark detection, 3D face reconstruction).

Research Intern, Google Cloud AI   *05/2020 - 08/2020*
Host: Xuehan Xiong

- DeepFake video detection on Deepfake Detection Challenge (DFDC).

Research Intern, Siemens Healthnieers   *05/2019 - 08/2019*
Host: Siqi Liu

- Brain Hemorrhage detection
  (3D mask-RCNN based hemorrhage detection and segmentation).

Research Assistant, Microsoft Research Asia & Beihang University   *09/2013 - 07/2016*
Advisor: Yan Xu

- Multi-level feature learning for sensor-based human action recognition.

- Multi-instance learning and gradient boosting framework for histopathology image analysis.

- Optical Character Recognition system for East Asian languages.

PUBLICATION

Selected Conference:

- Accurate Point Cloud Registration with Robust Optimal Transport [pdf] [code]
  Zhengyang Shen*, *Jean Feydy**, *Peirong Liu, Ariel Hernn Curiale, Ruben San Jose Estepar, Raul San Jose Estepar, Marc Niethammer*, NeurIPS 2021.
- Adversarial Data Augmentation via Deformation Statistics [pdf]
  Sahin Olut, **Zhengyang Shen**, *Zhenlin Xu, Samuel Gerber, Marc Niethammer*, ECCV 2020.
- Anatomical Data Augmentation via Fluid-based Image Registration [pdf] [code] [video]
  Zhengyang Shen, *Zhenlin Xu, Sahin Olut, Marc Niethammer*, MICAAI 2020.
- Region-specific Diffeomorphic Metric Mapping [pdf] [code]
  Zhengyang Shen, *Franois-Xavier Vialard, Marc Niethammer*, NeurIPS 2019.
- Networks for Joint Affine and Non-parametric Image Registration [pdf] [code]
  Zhengyang Shen, *Xu Han, Zhenlin Xu, Marc Niethammer*, CVPR 2019.
- Contextual Additive Networks to Efficiently Boost 3D Image Segmentations [pdf]
  Zhenlin Xu, **Zhengyang Shen***, Marc Niethammer*, DLMIA 2018.

Journal:

- Learning Multi-level Feature For Human Action Recognition [pdf]
  Yan Xu, **Zhengyang Shen**, *Xin Zhang, et al.* Pervasive and Mobile Computing, 40(9), 2017.
- Parallel Multiple Instance Learning for Extremely Large Histopathology Image Analysis [pdf]
  Yan Xu, Yeshu Li, **Zhengyang Shen**, *Ziwei Wu, et al.* BMC Bioinformatics, 18(1), 2017.
- End-to-End Subtitle Detection and Recognition for Videos in East Asian Languages via CNN Ensemble with Near-Human-Level Performance [pdf]
  Yan Xu, Siyuan Shan, Ziming Qiu, Zhipeng Jia, **Zhengyang Shen**, *et al.* Signal Processing: Image Communication, 60(10), 2016.

SKILLS & LANGUAGES

Skills: Machine learning, Computer Vision, Medical Image Analysis, Computer Graphics, Natural Language Processing, Statistic Theory, Applied Statistic, Linear Programming, Numerical Computing, Convex Optimization, Function Analysis, Optimal Transport, Partial Differential Equations, Reinforcement Learning, Discrete Differential Geometry, Digital Geometry Processing.
Languages: Python, Matlab, C++, Cuda, Pytorch.