Songyou Peng | Curriculum Vitae

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Education

ETH Zurich   **Zurich, Switzerland**
PhD Student, Max Planck ETH Center for Learning Systems PhD Fellowship   *09/2019–now*
Supervisor: Prof. Marc Pollefeys & Prof. Andreas Geiger

Heriot-Watt University/University of Girona/University of Bourgogne
Erasmus Mundus M.Sc in Computer Visions and Robotics (VIBOT)   *09/2015–09/2017*
GPA: 17/20 (**rank 3/23**) **with distinction**
Thesis:"High Quality Shape from an RGB-D Camera Using Photometric Stereo"
Supervisor: Prof. Daniel Cremers

Xi'an Jiaotong University   **Xi'an, China**
B.Eng in Automation, focus: artificial intelligence   *08/2011–07/2015*
Cumulative GPA: 83.6/100, Major GPA: 87.4/100

Experience

Google Research   **Mountain View, USA**
Research Intern, mentor: Prof. Thomas Funkhouser   *06/2022–11/2022*
- Understand the 3D world with large language models. Paper submitted to CVPR 2023.

Meta Reality Labs Research   **Pittsburgh, USA (remote)**
Research Intern, mentor: Dr. Michael Zollhöfer   *09/2021–12/2021*
- Real-time neural rendering for 360-degree indoor scenes.

Agency for Science, Technology and Research (A*STAR)   **Singapore**
Research Engineer, Institute for Infocomm Research   *10/2018–07/2019*
- Performed an independent research project on universal architecture for bad-weather image restoration.
- Worked on traffic flow prediction with gated spatial-temporal CNNs and graph CNNs.

Advanced Digital Sciences Center, UIUC   **Singapore**
Research Engineer, supervisor: Dr. Stefan Winkler, IEEE Fellow   *01/2018–03/2019*
Research in affective computing.
- Developed a facial emotion analysis SDK for a 2-million SGD project.
- Published an ACM MM demo paper and an IEEE Transactions on Affective Computing paper.
- Won 1st place in vision-only task and 2nd place in overall in OMG-Emotion Challenge 2018.

Technical University of Munich (TUM)   **Munich, Germany**
Master Thesis, supervisor: Prof. Daniel Cremers & Dr. Yvain Queau   *01/2017–07/2017*
Depth Super-Resolution using photometric techniques.
- Proposed three photometric methods to obtain high-resolution depths with fine geometric details.
- One TPAMI paper and one ICCVW paper.

INRIA   **Grenoble, France**
Research Intern, supervisor: Prof. Peter Sturm   *2016 & 2017 summer*
- ICCV oral paper: designed a calibration guidance system for obtaining optimal calibration images.

INMOTION Technologies CO., LTD   **Shenzhen, China**
Machine Vision Algorithm Intern   *07/2015–08/2015*
- Approached accurate real-time person re-identification without facial information.

Selected Publications

- **Songyou Peng**, Kyle Genova, Chiyu "Max" Jiang, Andrea Tagliasacchi, Marc Pollefeys, Thomas Funkhouser, "OpenScene: 3D Scene Understanding with Open Vocabularies", In Submission, 2022.
- **Songyou Peng***, Zihan Zhu*, Viktor Larsson, Weiwei Xu, Hujun Bao, Zhaopeng Cui, Martin R. Oswald, Marc Pollefeys, "NICE-SLAM: Neural Implicit Scalable Encoding for SLAM", *CVPR*, 2022.
- **Songyou Peng**, Chiyu "Max" Jiang, Yiyi Liao, Michael Niemeyer, Marc Pollefeys, Andreas Geiger, "Shape As Points: A Differentiable Poisson Solver", *NeurIPS*, 2021. (**Oral, top 0.6%**)
- **Songyou Peng**, Michael Niemeyer, Lars Mescheder, Marc Pollefeys, Andreas Geiger, "Convolutional Occupancy Networks". *ECCV*, 2020. (**Spotlight, top 5%**)
- **Songyou Peng**, Peter Sturm, "Calibration Wizard: A Guidance System for Camera Calibration Based on Modelling Geometric and Corner Uncertainty". *ICCV*, 2019. (**Oral, top 4.6%**)
- **Songyou Peng***, Bjoern Haefner*, Alok Verma*, Yvain Quéau, Daniel Cremers, "Photometric Depth Super-Resolution". *TPAMI*, 2019.
- Zehao Yu, **Songyou Peng**, Michael Niemeyer, Torsten Sattler, Andreas Geiger, "MonoSDF: Exploring Monocular Geometric Cues for Neural Implicit Surface Reconstruction", *NeurIPS*, 2022.
- Michael Oechsle, **Songyou Peng**, Andreas Geiger, "UNISURF: Unifying Neural Implicit Surfaces and Radiance Fields for Multi-View Reconstruction". *ICCV*, 2021. (**Oral, top 3%**)
- Christian Reiser, **Songyou Peng**, Yiyi Liao, Andreas Geiger, "KiloNeRF: Speeding up Neural Radiance Fields with Thousands of Tiny MLPs", *ICCV*, 2021.
- Shaohui Liu, Yinda Zhang, **Songyou Peng**, Boxin Shi, Marc Pollefeys, Zhaopeng Cui, "DIST: Rendering Deep Implicit Signed Distance Function with Differentiable Sphere Tracing". *CVPR*, 2020.
- Le Zhang, **Songyou Peng**, Stefan Winkler, "PersEmoN: A Deep Network for Joint Analysis of Personality, Emotion and Their Relationship". IEEE Transactions on Affective Computing (**TAFFC**), 2019. (IF: 6.29)

Fellowships & Awards

Max Planck ETH Center for Learning Systems PhD Fellowship	2019 – 2023
Outstanding Reviewer of CVPR (150 out of 7000+ reviewers)	2022
Highlighted Reviewer of ICLR	2022
1st place in partial object recovery in SHARP Challenge at CVPR	2022
1st place in vision-only task and 2nd in overall in OMG-Emotion Recognition Challenge	2018
EU Erasmus+ mobility grant, awarded by European Union Commission	2016 & 2017
Excellent bachelor thesis (top 5% of all graduates), XJTU	2015
1st in Search and Rescue Robot Challenge, California State University, USA	2010
2nd in Trinity College Fire Fighting Home Robot Contest, Connecticut, USA	2010
2nd in RoboCup Junior China Qualification Trial, Suzhou, China	2007

Invited Talks

Large-Scale 3D Scene Reconstruction with NeRF. *Stanford University*	2022
Towards Practical Applications of NeRF. *Adobe Research*	2022
Neural Scene Representations for 3D Reconstruction. *University of Basel*	2022
Shape As Points: A Differentiable Poisson Solver. *Talking Papers Podcast*	2022
Shape As Points: A Differentiable Poisson Solver. *GAMES Webinar Series*	2021
Towards Practical Applications of NeRF. *GAMES Webinar Series*	2021

Teaching

Teaching Assistant at ETH Zurich

- [263-5902-00L] Computer Vision (Lecturer: Marc Pollefeys & Siyu Tang & Fisher Yu)   Fall 22
- [252-0579-00L] 3D Vision (Lecturer: Marc Pollefeys & Daniel Barath)   Spring 22
- [263-5904-00L] Deep Learning for Computer Vision: Seminal Work   Spring 22
- [252-0579-00L] 3D Vision (Lecturer: Marc Pollefeys & Viktor Larsson)   Spring 20
- [263-5904-00L] Deep Learning for Computer Vision: Seminal Work   Spring 20

Teaching Assistant at University of Tübingen

- [ML-4103] Deep Learning (Lecturer: Andreas Geiger)   Winter 20/21