

Shuai Chen

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EDUCATION

DPhil in Engineering Science (<i>Supervisor: Victor Prisacariu, AVL & Andrea Vedaldi, VGG</i>)	Sep 2020-2024
University of Oxford, Oxford	
M.S in Electrical Engineering	May 2016
University of Southern California, Los Angeles, CA	GPA 3.89/4.0
B.S in Electrical Engineering	May 2015
University of Southern California Los Angeles, CA	Major GPA 3.80/4.0, Cumulative GPA 3.64/4.0

RESEARCH INTERESTS

Computer Vision/Machine Learning. Proven track record of developing commercially successful AI algorithms for real-time mobile platforms and embedded systems, including image super-resolution, semantic segmentation, video stabilization, and more. Currently pursuing a DPhil with a focus on 3D vision, camera relocalization, neural rendering, and Generative AI.

PUBLICATIONS

- [1] **S Chen**, Z Wang, V A Prisacariu. Direct-PoseNet: Absolute Pose Regression with Photometric Consistency. International Conference on 3D Vision (**3DV**), **2021**
- [2] C Li, L Song, **S Chen**, R Xie, W Zhang. Deep Online Video Stabilization using IMU Sensors. IEEE Transactions on Multimedia (**TMM**), **2022**
- [3] **S Chen**, X Li, Z Wang, V A Prisacariu. DFNet: Enhance Absolute Pose Regression with Direct Feature Matching. European Conference on Computer Vision (**ECCV**), **2022**
- [4] C Liu, **S Chen**, Y Zhao, H Huang, V A Prisacariu, T Braud. HR-APR: APR-agnostic Framework with Uncertainty Estimation and Hierarchical Refinement for Camera Relocalisation. **ICRA**, **2024**
- [5] **S Chen**, Y Bhalgat, X Li, J Bian, K Li, Z Wang, V A Prisacariu. Refinement for Absolute Pose Regression with Neural Feature Synthesis. **CVPR**, **2024**
- [6] **S Chen**, T Cavallari, V A Prisacariu, E Brachmann. Map-Relative Pose Regression for Visual Re-Localization. **CVPR (Highlight)**, **2024**
- [7] E Brachmann, J Wynn, **S Chen**, T Cavallari, Á Monszpart, D Turmukhambetov, V A Prisacariu. Scene Coordinate Reconstruction: Posing of Image Collections via Incremental Learning of a Relocalizer, ArXiv, 2024
- [8] X Ma*, Y Bhalgat*, B Smart*, **S Chen**, X Li, J Ding, J Gu, D Z Chen, S Peng, J Bian, P H Torr, M Pollefeys, M Nießner, I D Reid, A X Chang, I Laina, VA Prisacariu. When LLMs step into the 3D World: A Survey and Meta-Analysis of 3D Tasks via Multi-modal Large Language Models, ArXiv, 2024

ACADEMIC SERVICES

Reviewer – ECCV 2022,24 CVPR 2023,24, ICCV 2023, ICRA 2024, RA-L 2024

EMPLOYMENT

- **Research Scientist Intern, Meta Reality Lab, Sunnyvale** Jun 2024-Dec 2024
- Generative AI/3D Understanding.
- **Research Scientist Intern, Niantic Inc, London** Jul 2023- Apr 2024
- Delivered one CVPR highlight paper (top 11.9%), one ECCV Submission, and one patent.
- **Senior AI Algorithm Engineer, Team Leader, Huawei Technologies, China** 2018-Jul 2020
- **AI Algorithm Engineer, Huawei Technologies, China** Jan 2017-2018

AI Video Stabilization (AIS)

Feb 2018- Jul 2020

- Developed real-time AI-based video stabilization algorithms, **achieving No.1 scores on DxOMark in 2019 and 2020**, and delivered them as **Top-selling features** for numerous Huawei flagship smartphones.
- Developed a face-centric video stabilization algorithm using face landmarks and IMU for front-camera videography.
- Co-designed a 2-stage EIS method with a novel camera ISP pipeline that reduced memory and power consumption by 30%+ while surpassing previous SOTA performance.
- Led the development of merging AIS into the AI Zoom for camera photography.

5D Video Temporal Noise Reduction

Feb 2018-May 2020

- Developed a real-time video noise reduction algorithm with multi-frame and IMU, **achieving No.1 on the DxOMark** in front camera 4K video de-noising, and delivered as a **top-selling feature for low-light videography** on Huawei flagship P40 series.

Face Attribute & Facial Landmark Detection

Feb 2018-Apr 2019

- Supervised 40+ real-time on-device face attribute classification algorithms and an occlusion-aware facial landmark detection algorithm, surpassed the 2018 SOTA results and delivered to products.

Multi-frame Super-resolution/Camera Zoom

Sep 2017-Feb 2018

- Developed a real-time multi-frame fusion-based super-resolution algorithm that incorporates super-resolution, de-noising, and sharpening tasks, became a part of the **top selling features** on Huawei flagship phones P20 series and **obtained No.1 score on DxOMark** mobile camera zoom evaluation.
- Implemented Face SR algorithm with GAN and face components-aware discrimination losses.

Single-frame Super-resolution/Camera Zoom

Jan 2017-Sep 2017

- Developed **industry-first** deep learning-based SR algorithm for mobile camera zoom, became one of the **top-selling features** on Huawei flagship phones Mate10 series & Honor V10.

Image Semantic Segmentation/Selfie Portrait Segmentation

Jan 2017-May 2017

- Developed a **top-selling feature** on Huawei flagship phones/tablets for portrait segmentation in Selfie Mode.

• Software Verification Engineer, Huawei Technologies, China

Aug 2016-Dec 2016

- Developed Android Boot automation testing environment in Python, which was used across all product lines of Huawei mobile phones.

• Engineer Intern, CITIC Pacific Mining in Perth, Australia

Jul 2012-Aug 2012

• Engineer Intern, Motorola Mobility in Tianjin TEDA, China

May 2012-Jul 2012

PATENTS

- US Patent 20,200,334,789: Image Processing Method and Device
- US Patent 20,220,180,485: Image Processing Method and Electronic Device
- WO Patent WO/2021/013,139: Image Processing Method and Device
- WO Patent WO/2022/206,605: Method for Determining Target Object, and Photographing Method and Device
- US Patent 20,240,037,708: Image Processing Method and Electronic Device
- CN Patent 113,572,948: Video Processing Method and Video Processing Device
- CN Patent 113,660,408: Video Shooting Anti-shake Method, Device

INVITED TALKS

- Invited Talk at Huawei Future AI Camera ISP Workshop. May 2020
- Invited Host at Huawei Global AI Workshop - Day 1. January 2019
- Invited Talk at Huawei Executive Management Team. May 9, 2018.

- Invited Talk at Huawei Beijing Research Center Annual Conference. January 27, 2018.

HONORS

- Huawei UK Ph.D. Fellowship (£100,000), 2021-2023
- Fast-track Promotion Plan for Outstanding Employees, Huawei Technologies 2017-2020
- CBG Hero Medal Award, Huawei Technologies, 2019
- Handset Product Line President Award of 2018, Huawei Technologies, 2019
- 2nd Prize Winner 2018 Huawei Beijing Research Center AI Hackathon, Huawei Technologies, 2018
- Top-10 Distinguished Engineer of the Year (10/9000 employees), Huawei Beijing Research Center, 2017
- Distinguished New Employee Award, Huawei Technologies, 2017
- Grand Final 2016 Hackathon, Huawei Beijing Research Center, 2016
- Alpha Lambda Delta National Honor Society, University of Southern California