Seonwook Park

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EDUCATION

ETH Zurich — Dr. Sc. Computer Science
Feb 2017 - Jun 2020 — Zurich, Switzerland

- Doctoral Dissertation: Representation Learning for Webcam-based Gaze Estimation.
- Advisor: Prof. Otmar Hilliges

ETH Zurich — MSc Computational Science & Engineering
Sep 2013 - May 2016 — Zurich, Switzerland

- Master Thesis: Direct Visual SLAM for RGB-D cameras in Project Tango.
- Advisor: Prof. Marc Pollefeys

Imperial College London — BSc Physics
Sep 2009 - Jun 2013 — London, United Kingdom

SELECTED EXPERIENCES

Lunit Inc. (Oncology Model-centric AI Research Team) — Research Scientist and Team Leader
Jul 2020 - Mar 2024 — Seoul, Korea

- Team Leader of Lunit SCOPE model research and development efforts, managing 4∼6 members.
- Ideated, established, and pushed research efforts, playing crucial roles in the submission and acceptance of 3 CVPR papers [C11,C12,C13].
- Improved the performance of models for the Lunit SCOPE line of products (1, 2) through meticulous research and development efforts, contributing to 2 high-impact clinical journal papers [J1,J2].
- Proactively started and pushed knowledge dissemination (seminars, workshops), hiring, and work culture related efforts for holistically improving the research environment.

ETH Zurich (Advanced Interactive Technologies Lab) — Research Assistant
Feb 2017 - Jun 2020 — Zurich, Switzerland

- Supervised by Prof. Otmar Hilliges and worked in close collaboration with Prof. Xucong Zhang.
- Mentored several bachelor and master students, resulting in a NeurIPS paper [C9], ICCV 2019 challenge winning, and 2 students being accepted to pursue their PhDs at the AIT lab.
- Contributed to the research community by releasing large-scale gaze datasets [C7,C8] and organizing the GAZE workshop series which had its 5th iteration at CVPR 2023.
- Proposed novel representation learning approaches to fundamentally impact gaze estimation [C4,C5], gaze estimator personalization [C6,C8], and gaze re-direction [C9] via top-tier conference publications.

NVIDIA Research (Learning and Perception Research Group) — Research Intern
Jan 2019 - Mar 2019 — Santa Clara, CA, United States

- Supervised by Dr. Shalini De Mello, Dr. Pavlo Molchanov, Dr. Umar Iqbal, and Prof. Jan Kautz.
- Significantly advanced the state-of-the-art of gaze estimation through few-shot learning and person-specific adaptation, resulting in an ICCV 2019 oral presentation [C6].

ETH Zurich (Computer Vision and Geometry Group) — Research Assistant
Jun 2016 - Sep 2016 — Zurich, Switzerland

- Supervised by Dr. Thomas Schöps and Prof. Marc Pollefeys.
- Systematically benchmarked direct visual tracking cost formulations using CUDA to evaluate robustness to lighting changes, published as a full paper at ICRA 2017 [C1].
- Rendered synthetic and captured real-world (with VICON Motion Capture) datasets for open-source release.

SELECTED PUBLICATIONS

A full list of publications is available at `https://scholar.google.com/citations?user=7vrLPjIAAAAJ&hl=en`
(No. of citations: 1,754 and h-index: 16 as of 14th May 2024)
(* indicates equal contribution across the marked authors.)

Journal Papers

[J2] **Artificial Intelligence–Powered Spatial Analysis of Tumor-Infiltrating Lymphocytes as Complementary Biomarker for Immune Checkpoint Inhibition in Non–Small-Cell Lung Cancer**

Sehhoon Park, Chan-Young Ock, Hyojin Kim, Sérgio Pereira, **Seonwook Park**, Minuk Ma, Sangjoon Choi, Seokhwi Kim, Seunghwan Shin, Brian Jaehong Aum, Kyunghyun Paeng, Donggeun Yoo, Hongui Cha, Sunyoung Park, Koung Jin Suh, Hyun Ae Jung, Se Hyun Kim, Yu Jung Kim, Jong-Mu Sun, Jin-Haeng Chung, Jin Seok Ahn, Myung-Ju Ahn, Jong Seok Lee, Keunchil Park, Sang Yong Song, Yung-Jue Bang, Yoon-La Choi, Tony S Mok, Se-Hoon Lee

Journal of Clinical Oncology, 2022 (Impact Factor = 44.54)

[J1] **Artificial intelligence–powered programmed death ligand 1 analyser reduces interobserver variation in tumour proportion score for non–small cell lung cancer with better prediction of immunotherapy response**

Sangjoon Choi, Soo Ick Cho, Minuk Ma, **Seonwook Park**, Sérgio Pereira, Brian Jaehong Aum, Seunghwan Shin, Kyunghyun Paeng, Donggeun Yoo, Wonkyung Jung, Chan-Young Ock, Se-Hoon Lee, Yoon-La Choi, Jin-Haeng Chung, Tony S Mok, Hyojin Kim, Seokhwi Kim

European Journal of Cancer, 2022 (Impact Factor = 10.00)

Full Conference Papers

[C13] **Benchmarking Self-Supervised Learning on Diverse Pathology Datasets**

Mingu Kang*, Heon Song*, **Seonwook Park**, Donggeun Yoo, Sérgio Pereira

*Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023

[C12] **OCELOT: Overlapped Cell on Tissue Dataset for Histopathology**

Jeongun Ryu*, Aaron Valero Puche*, JaeWoong Shin*, **Seonwook Park**, Biagio Brattoli, Jinhee Lee, Wonkyung Jung, Soo Ick Cho, Kyunghyun Paeng, Chan-Young Ock, Donggeun Yoo, Sérgio Pereira

*Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023

[C11] **Interactive Multi-Class Tiny-Object Detection**

Chunggi Lee, **Seonwook Park**, Heon Song, Jeongun Ryu, Sanghoon Kim, Haejoon Kim, Sérgio Pereira, Donggeun Yoo

*Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2022

[C10] **Weakly-Supervised Physically Unconstrained Gaze Estimation**

Rakshit Kothari, Shalini De Mello, Umar Iqbal, Wonmin Byeon, **Seonwook Park**, and Jan Kautz

*Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2021

🏆 **Oral Presentation (4.2% of submissions)**

[C9] **Self-Learning Transformations for Improving Gaze and Head Redirection**

Yufeng Zheng, **Seonwook Park**, Xucong Zhang, Shalini De Mello, and Otmar Hilliges

*Neural Information Processing Systems (**NeurIPS**)*, 2020

[C8] **Towards End-to-End Video-based Eye Tracking**

Seonwook Park, Emre Aksan, Xucong Zhang, and Otmar Hilliges

*European Conference on Computer Vision (**ECCV**)*, 2020

[C7] **ETH-XGaze: A Large Scale Dataset for Gaze Estimation under Extreme Head Pose and Gaze Variation**

Xucong Zhang, **Seonwook Park**, Thabo Beeler, Derek Bradley, Siyu Tang, and Otmar Hilliges

*European Conference on Computer Vision (**ECCV**)*, 2020

🏆 **Spotlight Presentation (3.2% of submissions)**

[C6] **Few-Shot Adaptive Gaze Estimation**

Seonwook Park*, Shalini De Mello*, Pavlo Molchanov, Umar Iqbal, Otmar Hilliges and Jan Kautz

*International Conference on Computer Vision (**ICCV**)*, 2019

🏆 **Oral Presentation (4.3% of submissions)**

[C5] **Deep Pictorial Gaze Estimation**

Seonwook Park, Adrian Spurr, and Otmar Hilliges

*European Conference on Computer Vision (**ECCV**)*, 2018

[C4] **Learning to Find Eye Region Landmarks for Remote Gaze Estimation in Unconstrained Settings**

Seonwook Park, Xucong Zhang, Andreas Bulling, and Otmar Hilliges

*ACM Symposium on Eye Tracking Research and Applications (**ETRA**)*, 2018

🏆 **Best Presentation Award**

[C3] **Cross-modal Deep Variational Hand Pose Estimation**

Adrian Spurr, Jie Song, **Seonwook Park**, and Otmar Hilliges

*Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2018

🏆 **Spotlight Presentation (8.9% of submissions)**

[C2] AdaM: Adapting Multi-User Interfaces for Collaborative Environments in Real-Time
Seonwook Park, Christoph Gebhardt*, Roman Rädle*, Anna Feit, Hana Vrzakova, Niraj Dayama, Hui-Shyong Yeo, Clemens Klokmose, Aaron Quigley, Antti Oulasvirta, and Otmar Hilliges
*SIGCHI Conference on Human Factors in Computing Systems (**CHI**)*, 2018

[C1] Illumination Change Robustness in Direct Visual SLAM
Seonwook Park, Thomas Schöps, and Marc Pollefeys
*IEEE Conference on Robotics and Automation (**ICRA**)*, 2017

Patents

[P1] Few-Shot Training of a Neural Network
Seonwook Park, Shalini De Mello, Pavlo Molchanov, Umar Iqbal, Jan Kautz
US Patent US11593661B2, 2023

ACADEMIC RECOGNITION

2023	CVPR	*Outstanding Reviewer* (full list).
	GAZE (CVPR Workshop)	*Best Poster Award*.
2021	ICCV	*Outstanding Reviewer* (full list).
	CVPR	*Outstanding Reviewer* (full list) and *Oral Presentation*.
2020	ECCV	*Spotlight Presentation*.
2019	ICCV	*Oral Presentation*.
	OpenEDS (ICCV Workshop)	*Image Generation Challenge Winner*.
2018	CVPR	*Spotlight Presentation*.
	ACM ETRA	*Best Presentation Award*.

ACADEMIC SERVICES

Organizer for

2024	6th International Workshop on Gaze Estimation and Prediction in the Wild (GAZE 2024) at CVPR
2023	OCELOT 2023: Cell Detection from Cell-Tissue Interaction Challenge at MICCAI
	5th International Workshop on Gaze Estimation and Prediction in the Wild (GAZE 2023) at CVPR
2021	3rd International Workshop on Gaze Estimation and Prediction in the Wild (GAZE 2021) at CVPR
2020	International Workshop on Eye Gaze in AR, VR, and in the Wild (OpenEyes 2020) at ECCV
2019	1st International Workshop on Gaze Estimation and Prediction in the Wild (GAZE 2019) at ICCV

Reviewer for

COMPUTER VISION	TPAMI (2019 ∼ 20), CVPR (2019 ∼ now), ICCV (2019 ∼ now), WACV (2021 ∼ now) BMVC (2019), HANDS (2019), GAZE (2019 ∼ 21)
MACHINE LEARNING	NeurIPS (2021 ∼ 22), ICLR (2023)
HUMAN-COMPUTER INTERACTION	CHI (2019 ∼ 20), UIST (2018), ETRA (2021)
COMPUTER GRAPHICS	TOG (2019), SIGGRAPH Asia (2022)
ROBOTICS	ICRA (2019), RA-L (2021)

SKILLS

PROGRAMMING LANGUAGES	Proficient in Python, LaTeX, BASH Paid experience with C++, JavaScript, Go, HTML/CSS, PHP Experience with MATLAB, LabVIEW, SQL, ActionScript
TOOLS AND LIBRARIES	PyTorch, TensorFlow, Keras Git, Mercurial, SVN GNU Linux, Docker
CONTRIBUTED TO	OpenCV, Theano

REFERENCES

Available on request.