

Jae Shin Yoon (윤재신)

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EDUCATION

Ph.D. University of Minnesota (UMN), USA 2017.08 - 2022.06

- Major: Computer Science and Engineering
- Metaverse in the Wild:
Modeling, Adapting, and Rendering of 3D Human Avatars from a Single Camera
- Analysis and Synthesis of Non-Rigid Dynamic Scenes using a Monocular Camera
- Area of study: computer vision, machine learning and graphics
- Advisor: [Prof. Hyun Soo Park](#)

• **M.S. Korea Advanced Institute of Science and Technology (KAIST), Korea** 2015 - 2017

- Major: Robotics Engineering
- Video Object Segmentation using Convolutional Neural Networks
- Area of study: computer vision, machine learning, and robotics
- Advisor: [Prof. In So Kweon](#)

• **B.E. Hanyang University, Korea** 2009 - 2015

- Major: Electrical Engineering
- Advisor: [Prof. Yong Ho Song](#)
- Military service

2010 - 2011

• **Exchange Student. Kobe University, Japan** 2012

INTERNSHIP

• **Adobe Research, San Jose (Virtual)** 2021/06 - 2021/08

- Mentor: [Dr. Duygu Ceylan](#)
- Collaborator: [Dr. Tuanfeng Wang](#), [Dr. Jingwan \(Cynthia\) Lu](#), [Dr. Jimei Yang](#), [Dr. Zhixin Shu](#)
- Project: High-fidelity animatable avatar modelling using a single camera
:: Design a neural 3D motion representation for high-fidelity rendering of dynamic humans with photorealistic motion-dependent texture using a single camera.
:: Develop a new generative model that can synthesize geometry and appearance from arbitrary body poses and views.
:: Related publication: “*Learning Motion-Dependent Appearance for High-Fidelity Rendering of Dynamic Humans from a Single Camera*” (CVPR 2022)

• **MPI Graphics and Vision Video Lab, Saarland, Germany** 2020/09 - 2021/01

- Advisor: [Prof. Christian Theobalt](#)
- Collaborator: [Dr. Lingjie Liu](#), [Dr. Vladislav Golyanik](#), [Dr. Kripasindhu Sarkar](#)
- Project: Building generative models for human in arbitrary clothing from a single image.
:: Developed an AI model that can generate human animation from a single image by learning synthetic human data.
:: Designed a novel compositional neural networks to predict silhouette, garment labels, and appearance of in-the-wild human in arbitrary body poses using a single image.
:: Related publication: “*Pose-Guided Human Animation from a Single Image in the Wild*” (CVPR 2021)

- **NVIDIA Learning and Perception Research group, Santa Clara, USA** 2019/02 - 2019/08
 - Mentor: [Dr. Kihwan Kim](#), Director: [Dr. Jan Kautz](#), Collaborator: [Dr. Orazio Gallo](#)
 - Project 1: Novel view synthesis of dynamic scene
 - :: Developed a pipeline and neural network that can synthesize an event at an arbitrary time and view given a set of image collection of a dynamic event captured from a monocular camera.
 - :: Related publication: “*Novel View Synthesis of Dynamic Scenes with Globally Coherent Depths from a Monocular Camera*” (CVPR 2020)
 - Project 2: Neural Cloth Retargeting from a Single Image
 - :: Developed a neural network that can predict a plausible 3D cloth deformation from a single image.
 - :: Related publication: “*Neural 3D Clothes Retargeting from a Single Image*” (Arxiv)
- **Facebook Reality Labs, Pittsburgh, USA** 2018/06 - 2018/08
 - Mentors: [Dr. Takaaki Shiratori](#), [Dr. Shoou-I Yu](#)
 - Researched a learning-based graphics algorithm for 3D face rendering.
 - :: Developed monocular 3D face tracking using a convolutional neural network.
 - :: Self-supervised domain adaptation from controlled laboratory condition to real-world scenes.
 - :: Related publication: “*Self-Supervised Adaptation of High-Fidelity Face Models for Monocular Performance Tracking*” (CVPR 2019 [oral])
- **Korea Institute of Science and Technology (KIST), Korea** 2017/03 - 2017/08
 - Mentor: [Dr. Hwasup Lim](#), Director: [Dr. Sang Chul Ahn](#)
 - Developed a computer vision algorithm, especially focusing on 3D model texturing.
 - :: MRF based face-aware 3D model texturing for natural face textures
 - :: Poisson based graph-wise inpainting for texture hole filling
 - :: High-resolution image registration to low-resolution Kinect image using perspective n points

COLLABORATION

- **Intel Labs, Santa Clara, USA** 2018/03 - 2019/12
 - Build a large-scale human multiview dataset for human body expression with natural clothing.
 - 107 synchronized HD cameras captured 772 distinctive subjects across ethnicity, age, and style.
 - Collaborator: [Prof. Jaesik Park](#)
 - Related publication: “*HUMBI 1.0: Human Multiview Behavioral Imaging Dataset*” (CVPR 2020)
- **Samsung Electronics, Korea** 2016/01 - 2017/02
 - Detect, segment and classify the lane, traffic sign, road marking, and vanishing point with deep multi-tasking network for autonomous driving.
 - Related publication: “*VPGNet: Vanishing Point Guided Network for Lane and Road Marking Detection and Recognition*” (ICCV 2017)

TEACHING

- CSCI 5611, Computer Vision Teaching Assistant at **UMN** 2020/01 - 2020/05
- CSCI 2033, Linear Algebra Teaching Assistant at **UMN** 2017/09 - 2017/12
- RE510, Robotics Experiment Teaching Assistant at **KAIST** 2016/03 - 2016/06

PUBLICATION

- **International Publication**

- **Jae Shin Yoon**, Duygu Ceylan, Tuanfeng Wang, Jingwan Lu, Jimei Yang, Zhixin Shu, and Hyun Soo Park. “Learning Motion-Dependent Appearance for High-Fidelity Rendering of Dynamic Humans from a Single Camera”, *IEEE Computer Vision and Pattern Recognition (CVPR 2022)*
- **Jae Shin Yoon**, Zhixuan Yu, Jaesik Park, and Hyun Soo Park. “HUMBI: A Large Multiview Dataset of Human Body Expressions and Benchmark Challenge”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI 2022)* [Journal]
- **Jae Shin Yoon**, Lingjie Liu, Vladislav Golyanik, Kripasindhu Sarkar, Hyun Soo Park, and Christian Theobalt. “Pose-Guided Human Animation from a Single Image in the Wild”, *IEEE Computer Vision and Pattern Recognition (CVPR 2021)*
- **Jae Shin Yoon**, Kihwan Kim, Orazio Gallo, Hyun Soo Park, and Jan Kautz. “Novel View Synthesis of Dynamic Scenes with Globally Coherent Depths from a Monocular Camera”, *IEEE Computer Vision and Pattern Recognition (CVPR 2020)*
- {***Jae Shin Yoon**, ***Zhixuan Yu**}, Prashanth Venkatesh, Jaesik Park, Jihun Yu, and Hyun Soo Park. “HUMBI 1.0: Human Multiview Behavioral Imaging Dataset”, *IEEE Computer Vision and Pattern Recognition (CVPR 2020)* (*indicates joint first author)
- **Jae Shin Yoon**, Takaaki Shiratori, Shoou-I Yu, and Hyun Soo Park. “Self-Supervised Adaptation of High-Fidelity Face Models for Monocular Performance Tracking”, *IEEE Computer Vision and Pattern Recognition (CVPR 2019)* [oral presentation]
- **Jae Shin Yoon**, Ziwei Li, Hyun Soo Park. “3D Semantic Trajectory Reconstruction from 3D Pixel Continuum”, *IEEE Computer Vision and Pattern Recognition (CVPR 2018)*
- Yookyung Choi, Namil Kim, Soonmin Hwang, Kibaek Park, **Jae Shin Yoon** and In So Kweon. “KAIST Multi-spectral Day/Night Dataset for Autonomous and Assisted Driving”, *Transaction on Intelligent Transportation System (T-ITS)*
- **Jae Shin Yoon**, Francois Rameau, Junsik Kim, Seokju Lee, Seunghak Shin and In So Kweon. “Pixel-Level Matching for Video Object Segmentation using Convolutional Neural Networks” *IEEE International Conference on Computer Vision (ICCV 2017)*
- Seokju Lee, Junsik Kim, **Jae Shin Yoon**, Seunghak Shin, Oleksandr Bailo, Namil Kim, Tae-hee Lee, Hyun Seok Hong, Seung-Hoon Han, and In So Kweon. “VPGNet: Vanishing Point Guided Network for Lane and Road Marking Detection and Recognition” *IEEE International Conference on Computer Vision (ICCV 2017)*
- Oleksandr Bailo, Seokju Lee, Francois Rameau, **Jae Shin Yoon**, and In So Kweon. “Robust Road Marking Detection and Recognition using Density-Based Grouping and Machine Learning Techniques.” *IEEE Winter Conference on Applications of Computer Vision (WACV 2017)*
- **Jae Shin Yoon**, Kibaek Park, Soonmin Hwang, Namil Kim, Yookyung Choi, Francois Rameau and In So Kweon. “Thermal-Infrared based Drivable Region Detection”, *IEEE Intelligent Vehicle Symposium (IV 2016)*.
- Yookyung Choi, Namil Kim, Kibaek Park, Soonmin Hwang, **Jae Shin Yoon** and In So Kweon “All-Day Visual Place Recognition: Benchmark Dataset and Baseline”, *IEEE Computer Vision and Pattern Recognition Workshop 2015 on Visual Place Recognition in Changing Environments (CVPR-VPRICE 2015)*

- Soonmin Hwang, Yukyung Choi, Namil Kim, Kibaek Park, **Jae Shin Yoon** and In so Kweon “Low-Cost Synchronization for Multispectral Cameras”, *IEEE International Conference on Ubiquitous Robots and Ambient Intelligence (URAI 2015)*
- Namil Kim, Yukyung Choi, Soonmin Hwang, Kibaek Park, **Jae Shin Yoon** and In So Kweon “Geometrical calibration of multispectral calibration”, *IEEE International Conference on Ubiquitous Robots and Ambient Intelligence (URAI 2015)*
- **Technical Report**
 - **Jae Shin Yoon**, Kihwan Kim, Jan Kautz, and Hyun Soo Park “Neural 3D Clothes Retargeting from a Single Image.”, *Arxiv* 2021.
- **Domestic Publication**
 - **Jae Shin Yoon**, Donghyeon Cho, Kibeak Park, Jinsun Park and In So Kweon “Video Stabilization using Spline based Ideal path” *28th Workshop on Image Processing and Image Understanding (IPIU)*, Feb 2016

INVITED TALK

- **Metaverse in the Wild: Modeling, Adapting, and Rendering of 3D Human Avatars from a Single Camera**
 - Adobe Research (job talk), hosted by Dr. Cynthia Lu 2022
- **Novel View Synthesis from Dynamic Scenes**
 - CVPR Tutorial on Novel View Synthesis: From Depth-Based Warping to Multi-Plane Images and Beyond [[Link](#), [Slide](#)] 2020
 - CVPR Workshop on 3D Scene Understanding for Vision, Graphics, and Robotics [[Link](#)] 2020
- **Self-Supervised Adaptation of High-Fidelity Face Models from Monocular Video**
 - CVPR [oral presentation](#) 2019
 - Think Tank Team at Samsung Research America in Mountain View, hosted by Dr. Abhijit Bendale 2019
 - UofM 50th Anniversary Research Showcase (poster) 2019
- **3D Human Behavioral Imaging**
 - University of Minnesota (UMN) Graduate Research and Discussion Seminars (GRaDS) 2019
 - Seoul National University (SNU) Vision Seminar, hosted by Prof. Bohyung Han 2019
 - Pohang University of Science and Technology (POSTECH) Computer Vision group hosted by Prof. Minsu Cho 2019
 - Korea Institute of Science and Technology (KIST), hosted by Dr. Hwasup Lim 2019
- **3D Semantic Trajectory Reconstruction from 3D Pixel Continuum**
 - Amazon Graduate Research Symposium (poster) 2019
 - University of Minnesota [VCAI Seminar](#) 2018
- **Semantics on the Road for All-day Autonomous Driving** 2018
 - Hyundai Top Talent Forum

PROFESSIONAL SERVICE

- **Reviewer**
 - *Computer Vision and Pattern Recognition (CVPR)* IEEE | 2018, 2019, 2020, 2021, 2022
 - *Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)* | 2021
 - *European Conference on Computer Vision (ECCV)* IEEE | 2020, 2022
 - *International Conference on Computer Vision (ICCV)* IEEE | 2019, 2021
 - *International Conference on Learning Representations (ICLR)* | 2022

- *Eurographics Computer Graphics Forum (CGF)* | 2021
- *Conference on Artificial Intelligence (AAAI)* | 2020, 2021
- *Winter Conference on Applications of Computer Vision (WACV)* IEEE | 2020, 2021, 2022
- *International Conference on 3D Vision (3DV)* | 2021
- *Neural Information Processing Systems (NeurIPS)* | 2022
- *Neural Information Processing Systems (NeurIPS)* dataset and benchmark track | 2021, 2022
- *Neural Information Processing Systems (NeurIPS)*, Workshop on Self-Supervised Learning: Theory and Practice | 2021
- *Asian Conference on Computer Vision (ACCV)* IEEE | 2018, 2020
- *Intelligent Vehicle Symposium (IV)* IEEE | 2016
- *Computer and Graphics* | 2021
- *Autonomous Robots* | 2020
- *Transaction on Multimedia* IEEE | 2018, 2021
- *Geoscience and Remote Sensing Letters* | 2019
- *CVPR Workshop on Computer Vision for Animal Behavior Tracking and Modeling* | 2021
- *ICML Workshop on Self-Supervised Learning for Reasoning and Perception* | 2021
- *NeurIPS Workshop on Self-Supervised Learning: Theory and Practice* | 2020, 2021

HONORS & AWARDS

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| • Outstanding Reviewer Award, IEEE Conference on Computer Vision and Pattern Recognition | 2021 |
| • Doctoral Dissertation Fellowship (DDF), University of Minnesota (\$ 25,000) | 2021 |
| • Top Graduate Research Award, UofM Graduate Research and Discussion Seminar | 2019 |
| • Summa Cum Laude, Hanyang University (GPA : 4.08/4.5) (94.6 %) | 2015/02 |
| • Scholarship, Hanyang Brain scholarship (\$1,440) | 2014 |
| • Prize for the top first percentile GPA, Hanyang University (\$3,740) | 2013/09 |
| • Miraeasset Park Hyeon-Joo foundation scholarship for exchange student (\$8,565) | 2012 |
| • Qualcomm Scholarship for outstanding engineer, Qualcomm corp (\$3,740) | 2011 |