Johanna Karras

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Research Focus

Generative models for image and video synthesis, with an emphasis on diffusion- and flow-based methods for photorealism, multimodal control, and virtual humans and garments. Experience leading end-to-end research systems and large-scale dataset development in industry research environments.

Education

University of Washington, PhD Computer Science 2021 - present
Advised by Ira Kemelmacher-Shlizerman and Steve Seitz
Thesis: *"Generative AI for Life-Like Digital Garment Visualization"*

California Institute of Technology, B.S. Computer Science 2017 - 2021
Undergraduate Research, Teaching Assistant

Research

FIT: A Large-Scale Dataset for Fit-Aware Virtual Try-On *Johanna Karras, Yuanhao Wang, Yingwei Li, Ira Kemelmacher-Shlizerman*
Preprint 2026

- Designed and implemented a large-scale synthetic dataset generation pipeline for photorealistic virtual try-on, covering diverse body shapes, garment sizes, and precise fit measurements
- Developed the first-ever fit-aware virtual try-on method conditioned on exact person/garment measurements, enabling controllable and physically grounded virtual try-on

HoloGarment: 360° Novel View Synthesis of In-the-Wild Garments *Johanna Karras, Yingwei Li, Yasamin Jafarian, Ira Kemelmacher-Shlizerman*
Preprint 2025

- Developed a diffusion-based novel view synthesis method for garments captured in in-the-wild settings
- Addressed severe occlusion, non-rigid deformation, and limited viewpoint coverage, enabling 360° garment visualization from sparse real-world video

Fashion-VDM: Video Diffusion Model for Virtual Try-On *Johanna Karras, Yingwei Li, Nan Liu, Luyang Zhu, Innfarn Yoo, Andreas Lugmayr, Chris Lee, Ira Kemelmacher-Shlizerman*
SIGGRAPH Asia 2024

- Proposed the first diffusion-based framework for video virtual try-on, introducing novel architecture, training, and inference strategies to achieve temporally consistent and accurate garment transfer

Perturb-and-Revise: Flexible 3D Editing with Generative Trajectories *Susung Hong, Johanna Karras, Ricardo Martin-Brualla, Ira Kemelmacher-Shlizerman*
CVPR 2025

- Introduced an iterative perturb-and-revise generative framework for flexible 3D scene and object editing via diffusion-based trajectory refinement

DreamPose: Fashion Image-to-Video Synthesis via Stable Diffusion *Johanna Karras, Aleksander Holynski, Ting-Chun Wang, Ira Kemelmacher-Shlizerman*
ICCV 2023

- Proposed an image-to-video diffusion framework that generates temporally coherent human motion from a single fashion image using latent diffusion models

Deep Neural Networks for Black Hole Imaging *Johanna Karras, He Sun, Katie Bouman*

Extended Abstract, WiCV, CVPR 2021

- Applied deep convolutional neural networks to reconstruct black hole images from sparse and noisy telescopic measurement data

Experience

Google Research, *PhD Student Researcher* July, 2025 - present

- See *FIT: A Large-Scale Dataset for Fit-Aware Virtual Try-On*

Google Research, *PhD Student Researcher* June, 2024 - June, 2025

- See *HoloGarment: 360° Novel View Synthesis of In-the-Wild Garments*

Google Research, *PhD Student Researcher* June, 2023 - May, 2024

- See *Fashion-VDM: Video Diffusion Model for Virtual Try-On*

Streetscope Inc., *Software Engineering Intern* April, 2021 - September, 2021
J.P. Morgan and Chase, *Software Engineering Intern* June, 2019 - August, 2019
Microsoft, *Software Engineering Intern* June, 2018 – September, 2018

Awards & Recognitions

- UW Reality Lab – Amazon Fellowship, 2022
- NCWIT Collegiate Award Finalist (National Center for Women in Computing), 2020

Service & Outreach

- **Reviewer:** ICCV, SIGGRAPH, SIGGRAPH ASIA, ICLR, CVPR
- **Teaching Assistant:** UW: CSE 160, Caltech: CS 4, CS 2, CS 1
- **Outreach:** UW K-12 CS Outreach Program, UW CSENext Mentorship Program, Seattle Finnish Language School