James Noeckel

Contact Information

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Education

University of Washington, Seattle, WA
PhD in Computer Science and Engineering **Expected December 2024**

University of Washington, Seattle, WA
Masters of Computer Science and Engineering **June 2021**

Cornell University, Ithaca, NY
Bachelors in Computer Science with minor in Physics (GPA 4.0) **May 2017**

Publications

Deep CAD reconstruction from approximate RGB-D data *[under review, not working title]*

Jones, Benjamin T.*, Noeckel, James*, Kodnongbua, Milin*, Baran, Ilya, and Schulz, Adriana. "B-rep Matching for Collaborating Across CAD Systems." *ACM Trans. Graph. Vol. 42 No. 4, 2023.*

Noeckel, James, Jones, Benjamin T.,Willis, Karl, Curless, Brian, and Schulz, Adriana. "Mates2Motion: Learning How Mechanical CAD Assemblies Work." *ICML Workshop on Machine Learning in Computational Design, 2022*.

Noeckel, James, Schulz, Adriana, Curless, Brian, and Zhao, Haisen. "Fabrication-Aware Reverse Engineering for Carpentry." *Computer Graphics Forum Vol. 40 No. 5, 2021*.

Kungurn, Pramook, Wu, Rundong, Noeckel, James, Marschner, Steve, and Bala, Kavita. "Fast Rendering of Fabric Micro-Appearance Models Under Directional and Spherical Gaussian Lights. *ACM Transactions on Graphics Vol. 36 No. 6, 2017.*

Experience

University of Washington, Seattle, WA
PhD Researcher **September 2017 – Present**

Working as part of GRAIL and CDG labs advised by Brian Curless and Adriana Schulz, conducting research on methods for editable scene reconstruction with a focus on reverse engineering designs of manufactured objects. Previously published work in fabrication-aware reconstruction of carpented objects and inferring the motion of CAD assemblies using physics and deep learning. Most recently submitted a paper on 3D reconstruction of engineering CAD models from partial scans using deep learning and geometry optimization.

Meta, Seattle, WA **June 2023 – September 2023**
Research Scientist Intern

Developed an efficient automated pipeline for synthesizing manufacturable parts of smart wearable devices tailored to individuals from their head scans. Employed geometry processing techniques to generate part geometry adhering to fitment parameters predicted from head measurements based on data analysis of prior user study data.

NVIDIA, Santa Clara, CA
Software Engineering Intern **June 2019 – September 2019**

Added features to a real-time volumetric renderer for medical visualization, such as better denoising capability, and computing optical flow maps to improve stability with temporal accumulation and to facilitate training an improved, special purpose AI denoiser.

NVIDIA, Redmond, WA

Software Engineering Intern **June 2018 – September 2018**

Developed 3D mapping/reconstruction pipeline for robotic navigation using deep stereo depth estimation and temporal probabilistic mixture models to improve the quality of fused geometry.

Pacific Northwest National Laboratory, Richland, WA

SULI Intern **May 2016 – August 2016**

Developed data analysis software for the fundamental particle physics group to improve particle reconstruction and energy calibration techniques for the ILC detector.

Cornell University, Ithaca, NY

Undergraduate Research Assistant **Jan 2016 – June 2016**

Developed real-time implementation for a cloth rendering project under Prof. Kavita Bala (http://www.cs.cornell.edu/projects/ctcloth/), leading to co-authorship.

Teaching & outreach

University of Washington, Seattle, WA

Teaching Assistant **2023**

Prepared course assignment codebase and other materials, conducted office hours, and graded assignments/projects in CSE 556: Computational Fabrication and CSE 599: Special Topics in Computational Design.

University of Washington, Seattle, WA

Presenter at CS Open House **December 2022**

Presented my published work on predicting mates CAD mechanical assemblies to undergraduates and high school students to spark interest in CS research.

Cornell University, Ithaca, NY

Undergraduate Teaching Assistant **2017**

Conducted office hours and graded assignments and exams in CS 4620: Intro to Computer Graphics.

Notable Course Projects

Implemented an interactive real-time rigid body dynamics system in Java, bifurcation analysis of a dynamical system in Matlab, designed and implemented a domain-specific language for 2D sculpting art using Julia & Python

Skills

Computer graphics & vision, numerical analysis, computational physics, shader programming, 3D modeling, deep learning frameworks (Pytorch & Tensorflow), physics & simulation methods

Programming

C++, Python, CUDA, OpenGL, GLSL, Java, C#, Julia, Matlab, Mathematica, Racket, Haskell, Ocaml

Other interests

Drawing (traditional & digital art), video game modding, 3D modeling & animation in Blender

Shader programming (my shader was featured as “shader of the week” on Shadertoy: https://www.shadertoy.com/view/tls3WB)

Memberships & Awards

UW Reality Lab Researcher, 2019-2022

Wissner-Slivka Endowed Fellowship, 2017-2018

Phi Beta Kappa Society

Dean’s List, Cornell University, 2013-2016