

Jae Yong Lee

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INTRODUCTION

Hello! My name is Jae Yong Lee and I am a PhD candidate at the University of Illinois Urbana-Champaign (UIUC) specializing in computer vision. Additionally, I currently work as a computer vision engineer at Reconstruct.

My passion lies in the intersection of machine learning and computer vision, particularly in improving geometric computer vision problems with learned features. Recently, I have developed several innovative solutions, including a Real-time Neural Rendering system that eliminates the need for baking, an efficient neural scene representation, and a learning-based multi-view stereo system. I have also implemented segments of these algorithms in CUDA, where I have honed my expertise in estimating first-order and second-order gradients for complex function optimization.

In addition to my technical expertise, I am well-versed in turning ideas into scalable productions using cloud-based systems. My experience spans from server-side architecture, including load balancing and Dockerization, to delivery with Content Delivery Networks (CDN), all the way to client-side rendering with WebGL and GLSL.

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D. in Computer Science

Advisor: Derek Hoiem

Urbana-Champaign, IL

August 2018 – Dec 2023 (Expected)

University of Illinois at Urbana-Champaign

B.S. in Computer Engineering

Urbana-Champaign, IL

August 2010 – December 2016

RESEARCH EXPERIENCE

Meta Reality Labs

Research Intern (Mentor: Zhaoyang Lv)

Redmond, WA

Summer 2022

Amazon Go

Research Intern (Mentor: Chuhan Zou)

Seattle, WA

Summer 2021

Microsoft Corporation

Research Intern (Mentor: Joseph Degol)

Research Intern (Mentor: Joseph Degol)

Redmond, WA

Summer 2020

Summer 2019

ENGINEERING EXPERIENCE

Reconstruct Inc.

Computer Vision Engineer (Part Time)

Lead Visualization Engineer and Project Manager (Part Time)

Full Stack Developer (Part Time)

Part time developer / Student Intern

Urbana-Champaign, IL

2020-2023

2019

2018-2019

2015-2016

Freelance Developer

Contract 3D Computer Vision Engineer

Seoul, South Korea

2016-2018

Republic of Korea Air Force

Staff Sergeant

Osan, South Korea

2011 – 2013

PUBLICATIONS

Jae Yong Lee, Chuhan Zou, Derek Hoiem. Deep PatchMatch MVS with Learned Patch Coplanarity, Geometric Consistency and Adaptive Pixel Sampling. Arxiv, 2022

Jae Yong Lee, Yuqun Wu, Chuhan Zou, Shenlong Wang, and Derek Hoiem. QFF: Quantized Fourier Features for Neural Field Representations. Arxiv, 2022

Yuqun Wu*, **Jae Yong Lee***, Derek Hoiem. Sparse SPN: Depth Completion from Sparse Keypoints. Arxiv, 2022

Liwen Wu, **Jae Yong Lee**, Anand Bhattad, Yuxiong Wang, David A. Forsyth. DIVER: Real-time and Accurate Neural Radiance Fields with Deterministic Integration for Volume Rendering. In CVPR, 2022
(Oral Presentation, Best Paper Finalist)

Jae Yong Lee, Joseph DeGol, Chuhan Zou and Derek Hoiem. PatchMatch-RL: Deep MVS with Pixelwise Depth, Normal, and Visibility. In ICCV 2021
(Oral Presentation)

Jae Yong Lee, Joseph DeGol, Victor Fragoso and Sudipta. N. Sinha. PatchMatch-Based Neighborhood Consensus for Semantic Correspondence. In: CVPR. 2021

Jacob J. Lin, **Jae Yong Lee** and Mani Golparvar-Fard. Exploring the potential of image-based 3d geometry and appearance reasoning for automated construction progress monitoring. In Computing in Civil Engineering 2019: Data, Sensing, and Analytics, 162-170

Joseph DeGol, **Jae Yong Lee**, Rajbir Kataria, Daniel Yuan, Timothy Bretl and Derek Hoiem. FEATS: Synthetic Feature Tracks for Structure from Motion Evaluation. In 3DV, 2018

SKILLS

Advanced / Experienced

- Web Development: Express, **MongoDB**, **Webpack**, **Flask**, SQL, React
- Machine Learning: TensorFlow (C++ / Python), **PyTorch**
- Graphics: **Potree**, **Three.js**, **WebGL**, **OpenGL**, **GLSL**, **Unity3D**, **OpenCV**, QT5.0
- AWS: **EB**, **EC2**, **S3**, **SQS**, CloudFront, **IAM**, **Lambda**
- Version Control: **git** / svn / mercurial
- Programming Languages: **JavaScript**, **C++**, **Python**, **CUDA**, **C#**, C, Haskell, Common / Emacs Lisp, MATLAB

TEACHING

Computational Photography (CS 445)

Teaching Assistant

Urbana-Champaign, IL

Fall 2019

AWARDS

Best Paper Finalist

Our paper was selected as the Best Paper Finalist in CVPR 2022

Urbana-Champaign, IL

2022

Best Vocal Presentation Award

As Mentee in Promoting Undergraduate Research, University of Illinois

Urbana-Champaign, IL

December 2014