Lee Yuguang

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WORK EXPERIENCE

Zillow Group   **Aug. 2017 – Present**
Principal Applied Scientist   Seattle, WA

- Tech lead for a team of scientists and front-end, backend-end engineers responsible for building Zillow's wide-baseline image-based [floor plan reconstruction]() production pipeline from end to end. This product is the core of [Zillow's Showcase]() experience, generating hundreds of thousands of floorplan-centric multi-media experiences per year. We started from a prototype of mostly human-in-the-loop process for the go-to-market. Over the years, I've led several team technical efforts from model research to deployments to add automations. Our automation drove down cost by a magnitude of 10x:
  - Architect Zillow's first floor plan generation system which is deployed to hundreds of workers in production.
  - Architect image-based rendering pipeline with three.js and OpenGL shaders for consumer experience of indoor virtual touring with high-fidelity transition effects.
  - Researched and deployed pose estimation models from wide-baseline RGB images:
    - [CovisPose]() (ECCV 2022), [Salve]() (ECCV 2022), [GraphCovis]() (CVPRW 2023, best workshop paper)
  - Researched and deployed room layout estimation models & researched on depth estimation model.
    - [PSMNet]() (CVPR 2022), [BGDNet]() (CVPRW 2024), [U2rle]() (CVPRW 2023)
  - Automated structured geometry reconstruction & stylization, camera re-localization processes; published a large-scale academic dataset. Details above see:
    - [Zillow Indoor Dataset paper]() (CVPR 2021)
  - Dozens of [patents]() collectively from all items above. Led 3 different top-three-placing hack week projects.

University of Washington   **Jan. 2024 – Present**
Individual Researcher   Seattle, WA

- Joint research between Zillow Group and UW Allen School on indoor 3D reconstruction, specializing in fully automated floor plan reconstruction models from unlocalized wide-baseline RGB images.
  - [CVPR 2025 highlight paper]() (top 13% of all accepted papers) on precise indoor camera pose estimation and structure reconstruction using a combined diffusion and optimization model with end-to-end trainability.
- Researching on novel view synthesis from unposed wide baseline image inputs. Focused on building algorithms that produce free-form walkthrough experiences from dozens of input RGB images of a house scene.
- Earlier research (2015 - 2017): [Breast cancer detection]() with early deep learning model RCNN, ICPRAM 2018.

Adobe Creative Technology Labs   **June 2016 – Sept. 2016**
Researcher   Seattle, WA

- Prototyped a high-performance cross-platform photo processing pipeline based on Halide compiler. Our work was later adopted as the computational photography framework in products like Photoshop, Lightroom, etc.

EDUCATION

PhD, Computer Science, University of Washington   Expected Jan. 2026
MS, **Electrical Engineering**, University of Washington
MS, Geospatial Information Science, State University of New York

- Teaching assistance; Research on [large-footprint LiDAR waveform decomposition]().

BE, Opto-electrical engineering, Beijing University of Aeronautics and Astronautics (top-5 in China)

- Paid researcher: Built a Monte-Carlo ray-tracing engine and researched radiance transfer processes in large-scale vegetated scenes:
  - [Sensor impact](); [Vegetation health monitoring by separating fluorescence signal from large-scale scenes](); [CUDA ray-tracing acceleration](); Other papers.

SKILLS & INTERESTS

- **Skills:** 3D reconstruction and camera pose estimation, Deep learning model & system design, Generative image model design, Graphics rendering with raytracing, image-based rendering with three.js, GLSL and blender API, Deep experience working with front-end and full-stack engineers, mentoring junior applied scientists, prototyping and finding deployable science for large-scale commercial products.
- **Interests:** Shipping science works end-to-end from prototyping and resolving long-tail corner cases to collaborating with engineering teams to deploy and track the performance of pipelines. I like the intersection of science, engineering, team building and consumer feedback.