

Bosheng Li

(765)-775-6524 | li2343@purdue.edu | [LinkedIn](#) | [GitHub: edisonlee0212](#) | 4052 Mahaila Avenue, Unit B, San Diego, CA 92122

EDUCATION

Purdue University (*Ph.D. Candidate in Computer Science*) 08/2021 – 05/2025

- Research Assistant in the Computational Vegetation Group, Institute for Digital Forestry, and CGVLab since 2021
- Focused on Procedural Modeling, Vegetation Modeling, and High-Performance Rendering under the supervision of Prof. [Bedrich Benes](#)

Purdue University (*B.S & M.S. in Computer Science*) 08/2016 – 05/2021

- Computer Graphics | Visualization | Software Engineering | BSMS program.

WORK EXPERIENCE

Computational Geometry: 3D Model Optimization and LODs 05/2024 – 08/2024, **Lightspeed Studios, Tencent America**

- Researched and experimented with various Billboard Cloud, Imposter, and Flipbook techniques for simplifying vegetation assets.
- Proposed new undesirable primitive detection algorithm based on quad-based, SIMD-optimized rasterizer for automatic mesh occluder generation.
- Implemented a general ray tracer with custom BVH construction for scene definition in SDK, with GPU acceleration via bgfx.
- Redesigned the texture baking module to support PBR materials, achieving a 3x speed up with memory footprint reduction and resolving texture leaking artifacts from unresolved geometry correspondences.

Interactive Editing Framework for Reconstructed 3D Scenes from Single Images 05/2022 – 09/2022, **Adobe Research**

- Developed smart object/geometry selection tools based on graph distance and object segmentation using Adobe Sensei AI.
- Introduced a suite of geometry editing tools enabling mesh deformation, transformation, and sculpting.

Render Pipeline Research: Real-Time Rendering of Soft Shadows 05/2020 – 09/2020, **Timi Studio Group, Tencent**

- Designed and implemented an interactive rendering framework to evaluate various shadow map techniques using OpenGL.
- Implemented cascaded shadow maps (CSM) and resolved shimmering artifacts caused by camera movement.
- Investigated multiple soft shadow rendering techniques for improved realism and better performance.

SKILL

- **Programming Languages:** C++, glsl, CUDA, Java, C#, Python
- **Libraries, SDKs and APIs:** Vulkan, OpenGL, Nvidia OptiX, PhysX, ImGui, bgfx, yaml, Micromamba, conda
- **Development Tools:** git, CMake, Visual Studio, CLion, Unity, Nvidia Nsight, RenderDoc, Docker

PUBLICATIONS

1. [SIGGRAPH 2025] Li, B., Schwarz, N. A., Pałubicki, W., Pirk, S., Michels, D. L., & Benes, B. (2024). [Stressful Tree Modeling: Breaking Branches with Strands](#). ACM Transactions on Graphics (TOG)
2. [TGRS 2025] Zhou, X., Li, B., Benes, B., Habib, A., Fei, S., Shao, J., & Pirk, S. (2025). [TreeStructor: Forest Reconstruction with Neural Ranking](#). *IEEE Transactions on Geoscience and Remote Sensing*. [Link]
3. [SIGGRAPH 2024] Li, B., Schwarz, N. A., Pałubicki, W., Pirk, S., & Benes, B. (2024). [Interactive Invigoration: Volumetric Modeling of Trees with Strands](#). ACM Transactions on Graphics (TOG), 43(4), 1-13. [Link]
4. [SIGGRAPH 2024] Lee, J. J., Li, B., & Benes, B. (2023). [Latent L-systems: Transformer-based Tree Generator](#). ACM Transactions on Graphics, 43(1), 1-16. [Link]
5. [ECCV 2024] Lee, J. J., Li, B., Beery, S., Huang, J., Fei, S., Yeh, R. A., & Benes, B. (2024). [Tree-D Fusion: Simulation-Ready Tree Dataset from Single Images with Diffusion Priors](#). European Conference on Computer Vision (pp. 439-460). Cham: Springer Nature Switzerland. [Link]
6. [COMPAG] Zarei, A., Li, B., Schnable, J. C., Lyons, E., Pauli, D., Barnard, K., & Benes, B. (2024). [PlantSegNet: 3D point cloud instance segmentation of nearby plant organs with identical semantics](#). *Computers and Electronics in Agriculture*, 221, 108922. [Link]
7. Davis, J. M., Gaillard, M., Tross, M. C., Shrestha, N., Ostermann, I., Grove, R. J., ... & Schnable, J. C. (2024). [3D Reconstruction Enables High-Throughput Phenotyping and Quantitative Genetic Analysis of Phyllotaxy](#). *bioRxiv*, 2024-10.
8. [TPPJ] Ostermann, I., Benes, B., Gaillard, M., Li, B., Davis, J., Grove, R., ... & Schnable, J. C. (2024). [Sorghum segmentation and leaf counting using in silico trained deep neural model](#). *The Plant Phenome Journal*, 7(1), e70002.
9. [SIGGRAPH 2023] Li, B., Klein, J., Michels, D. L., Benes, B., Pirk, S., & Pałubicki, W. (2023). [Rhizomorph: The Coordinated Function of Shoots and Roots](#). ACM Transactions on Graphics (TOG), 42(4), 1-16. [Link]
10. [TVCG 2023] Zhou, X., Li, B., Benes, B., Fei, S., & Pirk, S. (2023). [DeepTree: Modeling Trees with Situated Latents](#). *IEEE Transactions on Visualization & Computer Graphics*, 01, 1–14. [Link]
11. [SIGGRAPH Asia 2021] Li, B., Kałużny, J., Klein, J., Michels, D. L., Pałubicki, W., Benes, B., & Pirk, S. (2021). [Learning to reconstruct botanical trees from single images](#). ACM Transactions on Graphics (TOG), 40(6), 1-15. [Link]
12. [PeerJ] Tross, M. C., Gaillard, M., Zwiener, M., Miao, C., Grove, R. J., Li, B., ... & Schnable, J. C. (2021). [3D reconstruction identifies loci linked to variation in angle of individual sorghum leaves](#). *PeerJ*, 9, e12628.

PROJECTS

EvoEngine: Interactive application framework for procedural modeling (Project) 09/2020 – Present, Purdue Univ.

- Developed a 3D rendering/simulation framework. Currently supporting 4+ active research projects that have resulted with 8+ publications.
- Keywords: Vulkan | GPU-Driven Rendering | Mesh Shading | Data-Oriented ECS | Asset & Serialization | Ray Tracing | Plugins System | Computational Geometry | Python Binding | GPGPU (Compute Shader / CUDA) | PBD Physics | CI/CD | Multi-threading (Job System)

TreeStructor: Forest Reconstruction from Point Cloud for Digital Forestry (Project) 05/2022 – 08/2024, Purdue Univ.

- Developed a synthetic forest point cloud dataset generation pipeline using procedural tree model and simulated LiDAR scanning for training.
- Designed 3D geometry reconstruction pipeline from predicted tree parts of entire forest.