





# Ben Limpanukorn





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## Education

- 2022 – Present     **Ph.D., University of California, Los Angeles (UCLA)** Computer Science
- 2021 – 2022     **M.S., University of California, Los Angeles (UCLA)** in Computer Science.  
Capstone: *Challenges and Methods for Testing NVMe SSD Devices using Software Fuzzing*.
- 2017 – 2021     **B.S., University of California, Los Angeles (UCLA)** in Computer Science and Engineering.



## Publications

- 1    **B. Limpanukorn**, J. Wang, H. J. Kang, Z. Zhou, and M. Kim, “Fuzzing mlir compilers with custom mutation synthesis,” in *2025 IEEE/ACM 47th International Conference on Software Engineering (ICSE)*, 2025, pp. 217–229.  DOI: 10.1109/ICSE55347.2025.00037.
- 2    J. Wang, Y. Qiu, **B. Limpanukorn**, H. J. Kang, Q. Zhang, and M. Kim, “Duoreduce: Bug isolation for multi-layer extensible compilation,” *Proc. ACM Softw. Eng.*, vol. 2, no. FSE, Jun. 2025.  DOI: 10.1145/3715747.
- 3    J. M. Clifford, **B. Limpanukorn**, and E. S. Jimenez, “An improved process to colorize visualizations of noisy x-ray hyperspectral computed tomography scans of similar materials,” in *2022 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC)*, 2022, pp. 1–4.  DOI: 10.1109/NSS/MIC44845.2022.10399061.
- 4    J. Clifford, E. Kemp, **B. Limpanukorn**, and E. S. Jimenez, “A process to colorize and assess visualizations of noisy x-ray computed tomography hyperspectral data of materials with similar spectral signatures,” in *2021 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC)*, 2021, pp. 1–8.  DOI: 10.1109/NSS/MIC44867.2021.9875740.

## Preprints

- 1    **B. Limpanukorn**, Y. Wang, Z. Patterson, *et al.*, *Structural code search using natural language queries*, 2025. arXiv: 2507.02107 [cs.SE].  URL: <https://arxiv.org/abs/2507.02107>.

## Experience

- 2022 – Present     **Graduate Student Researcher** SEAL Lab at UCLA.
- Developing techniques to build bridge the gap between out-of-the-box general fuzzers and more effective, custom fuzzers.
  - Evaluated the potential uses and limitations of software fuzzing techniques for testing NVMe SSDs.
- Jun – Dec 2024     **Applied Science Intern** Amazon Web Services.
- Developed a new approach to structural code search by translating natural language queries into domain-specific languages like Semgrep and GQL using a large language models.
  - Created a new benchmark for structural code search, consisting of 400 queries over 10 Java projects, to evaluate the performance of such tools.
  - The proposed method significantly outperformed baseline approaches, achieving up to a 57% higher F1 score than embedding-based approaches.

## Experience (continued)

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2020 – 2024



**R&D Graduate Student Intern** Sandia National Laboratories.

- Productionized object detection models for next-generation millimeter-wave scanners, resulting in a 6x reduction in inference time and improved precision/recall compared to a baseline model.
- Developed new methods to colorize/visualize hyperspectral CT data by combining dimension reduction (e.g. UMAP and T-SNE) with generalized linear models to improve the interpretability of spectrally similar materials.
- Used Vitis HLS to develop an FPGA implementation of a List-Mode MLEM reconstruction algorithm, achieving a 5x speed-up compared to an equivalent CPU implementation.

2019 – 2020



**DevOps Engineer** Camino Financial

- Created a CI/CD pipeline that increased the deployment rate by 25%.
- Refactored loan system architecture to enable zero-downtime deployments.
- Built a ChatOps solution to streamline and monitor deployments to staging and production environments.
- Introduced changes to the development workflow that reduced unnecessary overhead.

2018 – 2019



**Research Assistant** LEMUR Lab at UCLA

- Extended (Simulation Environment for Cooperative Localization) CoLo Project to incorporate signal strength and communication cost in its analysis and automated data collection for running physical experiments, greatly reducing setup time.

## Skills

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Languages



Python, C, C++,  $\LaTeX$ , Bash, Fish

Libraries/Frameworks



PyTorch, Tensorflow, NumPy, Matplotlib, Pandas