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**Title:** «VoliMap: Optimizing Key-Value Store Performance by Leveraging Userland Page Tables»

**Short Abstract:**

Modern applications such as cloud services, streaming platforms, and AI systems require fast, highly concurrent data management, where key-value stores play a central role.

Traditional data structures have important limitations: hash tables require costly resizing and do not efficiently support range queries, while tree-based structures incur higher lookup overhead due to node traversal.

We propose leveraging the MMU-managed page table as a tree structure in user space to enable hardware-accelerated traversal, combining array-like lookup speed with efficient range query support.