INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Iris and LZGD: Massively Parallel GPU-based Compression Mechanism

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Accelerate Blue Foundry - 2025/Life Sciences

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Accelerate Blue Foundry - 2025 (Life Sciences)

OVERVIEW

Iris and LZGD is a next-generation, massively parallel GPU-based image compression and buffering technology designed for whole slide imaging, enabling ultra-fast, precise, and low-latency digital pathology workflows that are seamless to integrate, highly scalable, and vendor-agnostic.

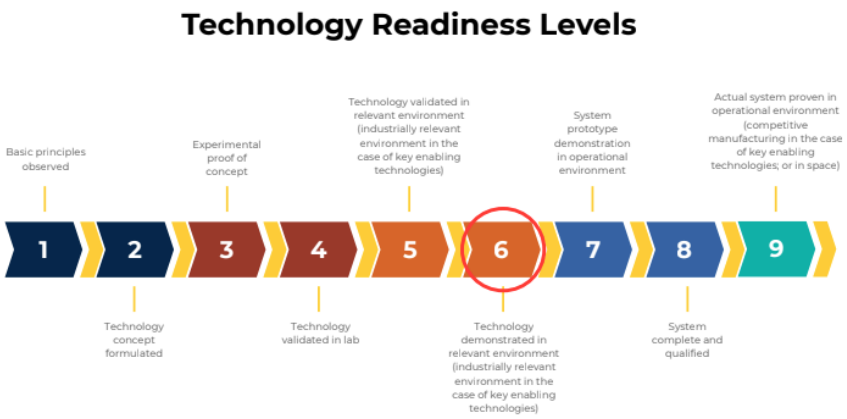
DESCRIPTION

Iris and LZGD work together to speed up the handling, compression, and retrieval of extremely large digital imaging files used in fields like pathology. Unlike traditional imaging systems that rely on slow, sequential processes and make assumptions about user needs, Iris's rapid tile buffering actively listens for user input and smartly adjusts the amount of image data it loads in real time, so users get immediate responses when viewing or requesting specific image regions. LZGD, meanwhile, leverages the parallel power of modern GPUs to search for repeated patterns across the entire image with just a single action, greatly increasing compression speed and data reduction no matter where patterns are located. Unlike current systems, Iris also includes an open, modern binary file format that supports state-of-the-art compression, instant access to image "tiles" for faster viewing, built-in validation, and straightforward language integration for developers, all released for broad adoption.

VALUE PROPOSITION

- **Unprecedented Speed and Responsiveness**: Iris's real-time, interruptible multitile image buffering and massively parallel LZGD compression deliver instant image access and ultra-fast data reduction, outpacing conventional sequential or heuristic-based systems.
- **Superior Image Quality and Reliability**: Accurate, on-demand data loading yields higher fidelity image scaling and annotation, while the robust file format enables simple error recovery and validation for mission-critical pathology.
- **Open, Flexible Integration**: Open-source file formats and ready-to-use code/language bindings make it easy to integrate or adapt across vendors, legacy systems, and new digital pathology platforms.

TECHNOLOGY READINESS LEVEL



INTELLECTUAL PROPERTY STATUS

Patent applications pending.

MARKET OPPORTUNITY

There is a critical need in digital pathology and related medical imaging for scalable, fast, and vendor-neutral solutions that can store, compress, and serve massive whole-slide images both locally and over networks. Iris and LZGD unlock practical opportunities for high-throughput digital pathology labs, real-time clinical collaborations between institutions, and integration into AI-driven medical workflows that depend on rapid image access and processing. Beyond healthcare, industries such as geospatial imaging, remote sensing, and research microscopy stand to benefit from faster data handling and open, extensible file standards.

Adoption trends show explosive growth in digital pathology and telemedicine, highlighting the increasing demand for efficient, interoperable, and secure image data solutions.