

Description of Additional Supplementary Files

Supplementary Movie 1: Evaluation of slide coverage using HistoCAM v0 with limited camera field of view (related to Supplementary Fig. 1).

Supplementary Movie 2: Real-time multi-magnification image acquisition and compositing using HistoCAM v1.

Supplementary Movie 3: Comparison of pathologist search behavior between glass (HistoCAM) and digital workflows.

Supplementary Movie 4: Real-time tile-level inference for acid-fast bacteria detection.

Supplementary Movie 5: Real-time slide-level inference for Gleason grading.

Supplementary Movie 6: Rapid annotation and tile-level dataset generation using SAM2 integration.

Supplementary Movie 7: Real-time HistoCAM operation on a compact edge AI computing system.