# A Clinician-Centric AI Co-Pilot for Enhanced Grading and Detection of Prostate Cancer on MRI

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1. Background & Significance: The interpretation of multi-parametric MRI (mpMRI) is the cornerstone of modern prostate cancer diagnosis, yet it suffers from significant inter-observer variability. This variability in PI-RADS scoring leads to diagnostic uncertainty, resulting in a high number of unnecessary negative biopsies and conversely, the risk of missing or under-grading clinically significant cancers. This project is born from a deeply personal family experience with a late-stage diagnosis, fueling our mission to create tools that provide clinicians with greater confidence and patients with the best chance for early, accurate detection.

2. Project Goal & Innovation: The objective of this research is to establish the feasibility of Insight MD, an innovative AI-powered software co-pilot. Our innovation lies in a dual focus: (1) a state-of-the-art 3D convolutional neural network for high-accuracy lesion detection and PI-RADS classification, and (2) an exceptionally intuitive, workflow-centric user interface designed by and for clinicians. We are building a tool that enhances the radiologist's expertise, turning complex data into clear, actionable insight.
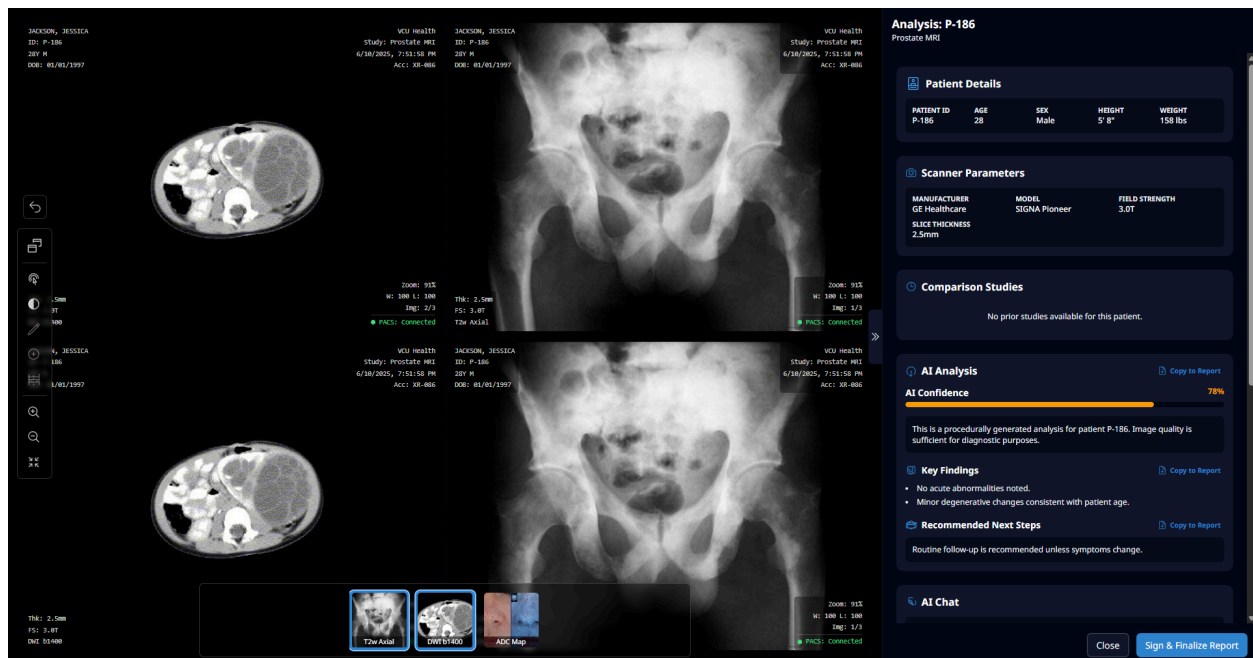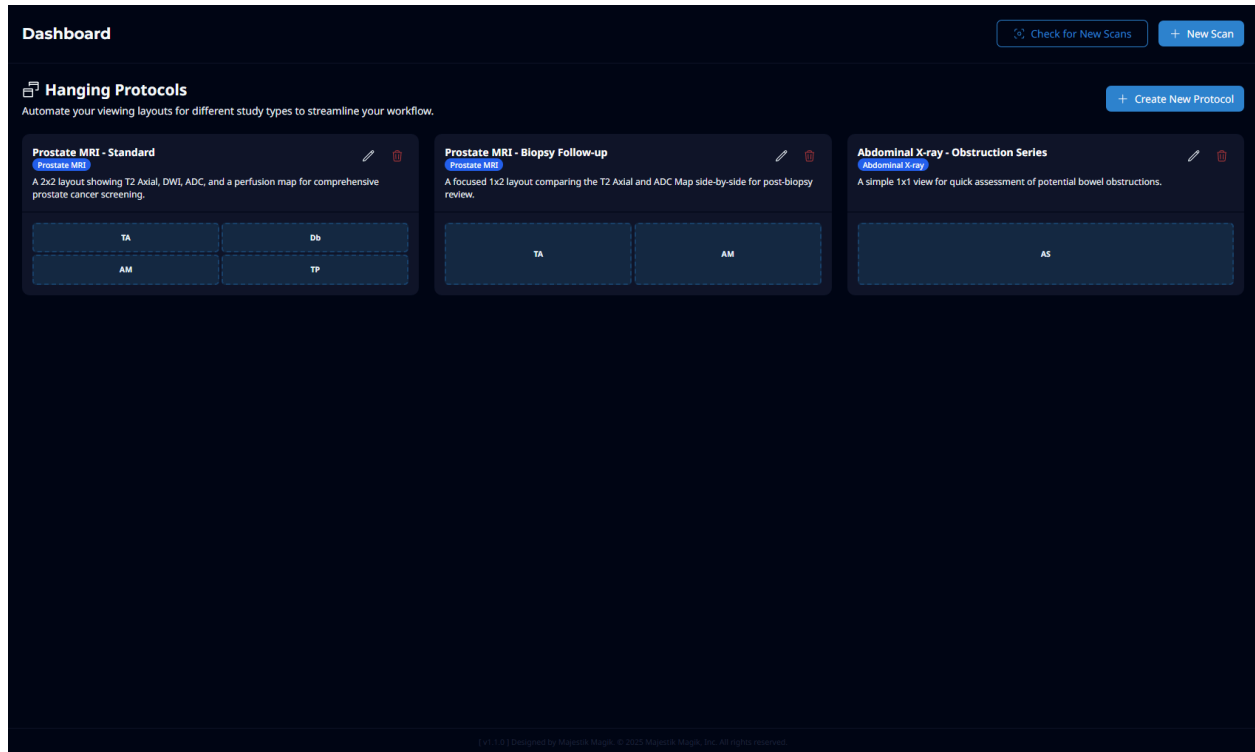
3. Proposed Phase I Research Plan (12 Months): We propose a retrospective study to validate the core technology of the Insight MD platform.

- **Aim 1: Data Curation.** We will aggregate and prepare a large, de-identified dataset of prostate mpMRI studies from public archives (e.g., TCIA).
- **Aim 2: AI Model Validation.** We will train and validate our 3D CNN model on the curated dataset to establish a baseline for high-accuracy lesion detection, segmentation, and PI-RADS classification.
- **Aim 3: Workflow Prototype Evaluation.** We will conduct usability testing sessions with board-certified radiologists using our high-fidelity prototype to confirm the workflow advantages of our human-centric design.

4. Proposed Collaboration with Clinical Partner: To bridge the gap from a promising prototype to a clinically relevant tool, we are seeking a research partnership with a collaborating radiologist. To make our vision more tangible, we have developed a live, interactive prototype and would be thrilled to provide a guided demonstration via Google Meet. Specifically, we are looking for:

- **Clinical Expertise:** A collaborating radiologist to serve as a paid consultant, providing expert guidance on the study protocol, assisting with data annotation, and offering feedback on the product's clinical utility.

- **A Letter of Support:** A formal letter of support from a faculty member would be invaluable for our upcoming SBIR grant submission to the National Cancer Institute.
- **Future Phase II Collaboration:** Laying the groundwork for a future Phase II study involving access to a retrospective, de-identified dataset of clinical images for robust, real-world model validation.

5. Funding Source: Majestik Magik, Inc. is preparing a Phase I Small Business Innovation Research (SBIR) grant proposal to the National Cancer Institute (NCI) to fund this research. The grant budget will include a subcontract to the clinical partner to cover service fees and the collaborating radiologist's time and expertise. All cloud computing and infrastructure costs are covered by our partnership with the AWS Activate program.

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