

JAY KSHIRSAGAR

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RESEARCH FOCUS

PhD candidate developing cardiovascular AI systems for clinical decision support in thoracic aortic disease — spanning 3D segmentation, vision-language pretraining, biomarker extraction for risk stratification, and NLP-based radiology report parsing, leveraging ~5,000 paired CT scans and reports at the University of Ottawa Heart Institute.

TECHNICAL SKILLS

AI/ML	PyTorch, MONAI, Transformers, U-Net, HuggingFace
Clinical AI	Foundation Model Fine-tuning, Vision-Language Models, Contrastive Pretraining, Clinical Validation
Medical Imaging	DICOM, ITK/SimpleITK, VMTK, 3D Slicer, TotalSegmentator, ONNX
Cloud/MLOps	Azure, GCP, MLflow, LakeFS, Docker, Slurm, CUDA
Programming	Python, C++, Java, JavaScript

PROFESSIONAL EXPERIENCE

AI Research Intern <i>Tomoverse Imaging</i>	Oct 2025–Present <i>Remote</i>
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- Developed segmentation and landmark detection models for cardiac CT to support clinical decision-making and surgical planning; designed end-to-end DICOM pipelines for data acquisition, preprocessing, and structured metadata extraction.
- Built an LLM-based pipeline to parse free-text radiology reports into structured clinical data, enabling automated extraction at scale across cardiovascular imaging workflows.

Graduate Research Assistant <i>Ottawa Heart Institute</i>	Sept 2023–Present <i>Ottawa, CA</i>
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- Designed and deployed a PACS-integrated 3D Slicer annotation platform with claim-based locking and role-based access control, enabling reliable data acquisition, annotation strategy, and ground-truth curation for clinical validation workflows.
- Developed a contrastive vision-language pretraining framework pairing 3D CT volumes with radiology reports to learn joint cardiovascular imaging-text representations, supporting zero-shot and few-shot transfer for downstream diagnostic tasks.
- Engineered a biomarker extraction pipeline automating aortic diameter, tortuosity, and volumetric measurements via VMTK centerline analysis, enabling longitudinal TAA monitoring and AI-driven risk stratification for surveillance-versus-intervention decision support.
- Fine-tuned cardiovascular imaging foundation models (VISTA3D, MedSAM) for aortic segmentation (Dice 0.94), with outputs feeding downstream clinical decision pipelines.

Software Developer <i>MobileMotionLab, University of Ottawa</i>	Jan 2023–May 2024 <i>Ottawa, CA</i>
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- Architected a cross-platform mobile app for real-time sensor data collection; optimized interpolation algorithms achieving a 35% improvement in processing speed.

Software Development Engineering Intern <i>Thomson Reuters</i>	Jan 2022–Jul 2022 <i>Ahmedabad, IN</i>
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- Built a bidirectional synchronization system between Legal Tracker and HighQ; automated 20+ UI/API test cases and architected a webhook-based PoC reducing inter-system communication latency.

Deep Learning Research Intern <i>University of Waterloo</i>	Jun 2021–Aug 2021 <i>Waterloo, CA</i>
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- Developed multi-class CNN segmentation models with a custom Tversky loss for OCT-based myopia diagnosis, improving optic disc IoU by 13%.

EDUCATION

University of Ottawa	<i>Expected Jan 2028</i>
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Ph.D. in Electrical & Computer Engineering

Funding: Mitacs Accelerate (2023–2028), University of Ottawa Heart Institute	Research: Cardiovascular AI, Vision-Language Models, Clinical Decision Support
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University of Ottawa	<i>Sept 2022</i>
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Masters in Electrical & Computer Engineering

GPA: **8.5/10.0**

Thesis: Novel View Synthesis of Coronary Arteries	Courses: Deep Learning, Medical Diagnostic Engineering, Computer Vision
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PUBLICATIONS

Generative-AI Assisted Novel View Synthesis of Coronary Arteries for Angiography	<i>July 2024</i>
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[IEEE Medical Measurements & Applications](#)