Yuxin Ding

MACHINE LEARNING ENGINEER | MEDICAL AI | COMPUTER VISION

Towson, MD | 443-799-7315 | yxding2022@gmail.com | LinkedIn

PROFESSIONAL SUMMARY

Machine learning engineer with experience developing and validating real-world AI systems across computer vision, 3D imaging, data engineering, and numerical optimization. Skilled in building multi-source ML data pipelines, diagnosing out-of-distribution failures, developing geometry-aware algorithms, and translating domain requirements into robust, configurable ML systems. Strong in Python/PyTorch, statistical evaluation, medical and volumetric imaging, RAG and LLM applications, and cross-functional delivery in regulated environments.

EXPERIENCE

Data Scientist Sep 2023 - Present
Carina Medical LLC *Baltimore, MD / Remote*

- Maintain and extend AutoBrachy's ML data and training pipeline across 5-6 institutions and 400+ clinical cases, harmonizing heterogeneous CT/MR datasets through data QA, ROI-definition reconciliation, outlier review, and detection of corrupted, duplicated, missing, or mismatched DICOM data.
- Diagnosed and reproduced out-of-distribution segmentation failures, then developed targeted simulation-based augmentation for anatomical deformation, vaginal packing, metallic rings, and radiopaque markers; combined robustness improvements increased tandem-and-ring processing success from 129/145 (89%) to 145/145 (100%).
- Developed anatomy- and geometry-aware post-processing algorithms for vertebral separation, applicator reconstruction, and merged-needle separation using slice-wise trajectory prediction, Hungarian data association, and spline-based reconstruction.
- Implemented channel reconstruction, dose calculation, and constrained dwell-time optimization with configurable target-versus-risk objectives and clinical constraints; built reproducible multi-site evaluation workflows with automated metric extraction, error logging, and version-controlled validation supporting FDA 510(k) documentation.

Software Engineering Intern Jun 2021 - Aug 2021
VMware *Beijing, China*

- Developed Python tooling for monitoring and visualizing algorithm outputs and long-running processing jobs, and benchmarked clustering metrics and bin-packing algorithms to support performance analysis and algorithm selection.

SELECTED PROJECTS

ManuoraTheChatbot | *Python, RAG, LLMs, Document Retrieval*

- Developing an LLM-powered product-support chatbot that answers functionality, usage, and troubleshooting questions directly from technical manuals, making complex documentation easier to navigate.
- Designed a version-aware RAG pipeline supporting both factual queries and multi-step workflow questions, retrieving relevant documentation while preserving procedural context and product-version specificity.

Video-Based Vehicle Speed Measurement | *Python, YOLOv5, StrongSORT, Computer Vision*

- Built an end-to-end video analytics pipeline for vehicle speed estimation using YOLOv5 detection, StrongSORT multi-object tracking, and geometric coordinate transformation.

EDUCATION

Johns Hopkins University Sep 2022 - Dec 2023
M.S.E. in Applied Mathematics and Statistics Baltimore, MD
Fudan University Sep 2018 - Jun 2022
B.S. in Statistics, Minor in Data Science Shanghai, China

CERTIFICATIONS

AWS Certified Machine Learning Engineer – Associate (MLA-C02) | Amazon Web Services | 2026 | Verify credential
Validated AWS ML/GenAI pipeline skills in data preparation, model development, deployment, monitoring, and security.

TECHNICAL SKILLS

Programming: Python, SQL, Java, R
Machine Learning & Computer Vision: PyTorch, scikit-learn, OpenCV, 3D segmentation, object detection and tracking, medical image analysis, data augmentation, model evaluation, RAG, LLM applications
Scientific Computing & Optimization: NumPy, SciPy, pandas, CVXPY, numerical optimization, hypothesis testing, non-inferiority analysis
Medical Imaging & Radiotherapy: DICOM, CT/MR imaging, SimpleITK, pydicom, RTSTRUCT/RTDOSE, TG-43 dose calculation, DVH analysis
Tools: Git, Linux