Yashraj Shanker

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AI-driven problem solver with expertise in deep learning, computer vision, and cloud ML solutions. Strong leadership in AI models for medical imaging, autonomous systems, and NLP. Skilled in hybrid CNN-Transformers, AI deployment on AWS/GCP, and real-world automation

EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Master of Science in Mechanical Engineering – Research — May 2025
Relevant Coursework – ML in Healthcare, Applied Machine Learning, Computer Vision — **GPA: 4.00/4.00**

Drexel University — Philadelphia, PA
Bachelor of Science in Mechanical Engineering — June 2023
Minor in Finance — **GPA: 3.79/4.00**

SKILLS

Programming: Python, R, SQL, C++, HTML/CSS, JavaScript, Bash, ROS2,
AI/ML: PyTorch, Scikit-Learn, Pandas, TensorFlow, Hugging Face, CNN, Deep Learning, Vision Transformers, NLPs
Cloud Computing: Amazon Web Services (EC2, S3, RDS, Lambda), GCP

PROFESSIONAL EXPERIENCE

ProBound AI — Dover, DE
AI Researcher Intern — October 2024 – January 2025

- Researched OpenAI, Google Gemini, AWS, and Meta Conversational AI LLMs to inform development strategies
- Built a Hugging Face sentiment analysis model for foreclosure calls, improving customer insights
- Developed and deployed conversational AI agents using Bland.ai for business consultant appointment workflows
- Analyzed conversational AI tools (Bland.ai, Vapi.ai) for developer integration and use cases

Centrillion Technology, Inc. — Palo Alto, CA
Intern (Machine Learning and Data Science) — June 2023 – August 2023

- Led ML & data science interns, streamlining workflows and CEO communication, improving project deliverables
- Implemented clean room procedures using imitation learning and a mobile robot, doubling workflow efficiency in DNA silicon chip production
- Developed a CNN algorithm to automate threshold prediction for Heatmap masks in mice brain cross-sections, reducing manual dataset labeling

Catalyx (Formerly Xyntek | CXV Global) — Newtown, PA
Junior Systems Engineer — September 2021 – March 2022

- Achieved 98% success on Factory Acceptance Test for a carton inspection module in cosmetics industry
- Programmed PreciseFlex 400 in Visual Basic, boosting pick-and-place efficiency by 20% for client demos
- Prototyped and developed an automated needle assembly with 10mm precision for pharmaceutical clients

PROJECTS

Telesurgery – CERLAB at Carnegie Mellon University — Pittsburgh, PA
Masters Research Student (Professor Kenji Shimada) — September 2023 – Present

- Designed a real-time CV algorithm for guidewire and catheter tracking in surgeries
- Aligned computer vision techniques for guidewire segmentation, tracking, registration in anatomical models
- Developed a backpropagation algorithm for 2D-3D medical image registration
- Building a hybrid classical-deep learning model for unimodal medical image registration

Hybrid CNN-Transformer Model for Cancer Detection — Pittsburgh, PA
[PyTorch | FastAPI | Docker | GCP] — August 2024 – December 2024

- Created a Hybrid CNN-Transformer achieving 91.4% validation accuracy for detecting cancer in WSIs
- Engineered a hierarchical feature extraction pipeline leveraging U-Net, Vision Transformers (ViTs), and multi-resolution patching for improved tissue structure analysis
- Used data augmentation to enhance robustness against staining variability and morphological differences
- Explored Swin Transformers, ensembles, and attention-based loss for better feature extraction and generalization

LEADERSHIP

- Graduate TA for 24-262: Mechanics 2: 3D Mechanics — January 2024 – Present
- Graduate TA for 24-677: Modern Control Theory — August 2024 – December 2024
- Graduate TA for 24-653: Materials and Their Processing for Mechanical Engineers — January 2024 – May 2024
- NASA Lunabotics: Founded Drexel's Lunabotics club — September 2022 – May 2023