AYUSH SHAH

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TECHNICAL SKILLS

- **Programming Languages:** Java, C, C++, Dart, HTML, CSS, JavaScript, Python, Solidity, Swift, TypeScript |
- **Frameworks and Libraries:** Flutter, ReactJS, Node.js, Express.js, NextJS, React Native, Flask, Django, OpenCV, WordPress, TensorFlow, PyTorch, Scikit-learn, Transformers, Docker | **IDEs**: VS Code, Android Studio Code, Cursor, Xcode, Jupyter Notebook |
- **AI/ML Tools & Technologies:** TensorFlow, PyTorch, Scikit-learn, OpenAI API, Hugging Face Transformers, LangChain, NLTK, spaCy |
- **Cloud & DevOps:** AWS (EC2, S3, CloudWatch, Lambda), CI/CD (GitHub Actions, CircleCI), Docker, Nginx
- **Databases:** PostgreSQL, MySQL, MongoDB, Firebase Real-time and Firestore, and DynamoDB |
- **Front-end Library:** Bootstrap, React-Bootstrap, Tailwind, and Material UI | **Version Control & Build tools:** Git, Maven |

PROFESSIONAL EXPERIENCE

The Lundquist Institute Torrance, California
Machine Learning Intern May 2025-Present

- Initiated a deep learning pipeline to segment the pericardium from thoracic CT scans for downstream cardiac analysis, working with 100 DICOM patient volumes totaling 10,000+ axial slices
- Explored and benchmarked 7+ modeling strategies, including 2D vs. 3D learning, TensorFlow vs. PyTorch MONAI, and architectures like UNETR, VNet, TransUNet, and Attention U-Net; evaluated each for Dice score, Hausdorff distance, precision, and accuracy
- Achieved robust full-volume performance: 96.9% hard Dice, 97.2% recall, 96.6% precision, 82.4% soft Dice, and a 5.58mm Hausdorff distance, validating the model's accuracy and boundary localization across the full test set

Kellog Northwestern Incubator Local Evanston, Illinois
Software Engineer Intern April 2024-July 2024

- Led development of an urban exploration platform for users having over 100 organizers on board, enabled users to book restaurant tables, reserve event tickets, and schedule activities
- Engineered mobile app with AWS DynamoDB, integrated backend systems, synchronized app features with website, and mentored junior developers, guiding app architecture and integration
- Conceptualized app prototype, facilitated its funding approval, and orchestrated its launch on both the App Store and Play Store getting over 50 beta testers

Harvard Medical School affiliated Mclean Hospital Massachusetts, Boston
Research Developer Intern - DigitalSoul September 2022-September 2023

- Developed a digital tool enabling users to explore spirituality's role in well-being through animated videos and interactive exercises, designed specifically for use in clinical research studies having over 50 patients
- Enhanced a Flutter app to capture user responses through interactive questionnaires and educational modules, optimized backend storage with AWS DynamoDB while implementing secure authentication through AWS Cognito
- Published app on App Store after thorough testing on TestFlight, and having over 1k impressions, improving data collection and facilitating clinicians in evaluating impact of spiritual well-being activities on patient outcomes

PROJECTS

Multilingual AI Text Classification & Explainability Dec 2024-Jan 2025

- Built a multilingual text classification pipeline to distinguish AI-generated content from human-written text across 79,081 samples in 11 languages, addressing rising concerns in misinformation and content authenticity.
- Implemented and benchmarked classical ML models (Logistic Regression, Random Forest, SVM), achieving up to 94.9% F1-score for binary classification using TF-IDF and Bag-of-Words features across a stratified dataset.
- Fine-tuned the XLM-RoBERTa-base transformer for multiclass classification of 8 popular LLMs (e.g., GPT-4, Vicuna-13B), reaching 86.1% macro F1-score and 86% accuracy, and saved model artifacts for future inference.
- Integrated Explainable AI methods (SHAP, LIME) to visualize token-level contributions in predictions across languages, generating 100+ visual interpretations to improve transparency for both local and global explanations.

Medical Product Tracking using Blockchain *GitHub* Aug 2023-June 2024

- Orchestrated creation of a blockchain-based solution utilizing NFTs, self-custodial wallets, and QR codes to verify authenticity of medical products, addressing 10.5% counterfeit drug problem as stated by World Health Organization
- Overcame technical barriers in integrating self-custodial wallets with NFTs, ensuring seamless user experience and privacy. Authored a research paper outlining solution's scalability, with potential for application across 5+ product sectors

Proposed Methodology for Real-Time Pistol Detection System *Research Paper* September 2021-August 2023

- Collaborated with IT department's assistant head on a research project wherein devised a system utilizing YOLOv5 to detect pistols in real-time from CCTV, it sends an alert to concerned authority upon detection
- Authored and presented a paper on same at ICACTA conference in October 2023 with securing 2nd best paper of category

EDUCATION

University of Southern California Los Angeles, California
Pursuing Master of Science in Computer Science (GPA - 3.92/4) August 2024-Present

Mumbai University Mumbai, India
Bachelor of Technology with Honors in DevOps (CGPA - 9.48/10) December 2020-June 2024