Asadullah Yousaf

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EDUCATION

Bahria University   Islamabad, Pakistan
Bachelor of Artificial Intelligence   *Sep.2021 - June.2025*

Army Public College   Murree, Pakistan
Intermediate in Computer Science (FBISE)   *March.2019 - Sep.2021*

EXPERIENCE

Co-Lead AI Engineer   July 2024 – July 2025
Bahria University   *Islamabad, Pakistan*

- Analyzed and compared various model architectures for generating floor plans from text to image
- Collaboratively divided tasks and managed progress, ensuring consistent communication and team accountability
- Designed and developed a full-stack Django-based web application to allow users to input parameters and generate floor plans dynamically
- Deployed the trained AI model and integrated it with the web app, enabling real-time floor plan generation
- Implemented vectorization of generated floor plans by converting post-generation raster images into editable DXF format for export and further customization

Generative AI Intern   July.2024 - Aug.2024
Center of Excellence, Bahria University   *Islamabad, Pakistan*

- Developed **Assisted Writing Learning** app for early learners
- Built 60,000-image handwriting dataset across multiple categories
- Fine-tuned MobileNet/EfficientNet for handwriting classification
- Lead data preparation and model training for optimal performance
- Conducted literature review on floor plan generation for FYP

PUBLICATIONS

Floor Plan Generation From NLP Description | *IEEE IBCAST Conference 2025*   2025

PROJECTS

Multilingual RAG-Based YouTube Chatbot | *Flask, FAISS, Hugging Face, Gemini API*   August 2025

- Developed a Flask-based AI application that enables users to interact with YouTube videos using natural language.

- Fetched and embedded video transcripts via FAISS and Hugging Face multilingual embeddings for Q&A and summarization.
- Implemented a **RAG (Retrieval-Augmented Generation)** pipeline powered by Gemini (gemini-2.5-flash) for context-aware responses.
- Maintained active user sessions for seamless multilingual conversation and enhanced video comprehension.
- Designed for educational, research, and content analysis use, offering an intuitive interface for exploring video insights.

Floor Plan Generation System | *Python, SQLite*   July 2024 – June 2025

- Developed a two-module system comprising **Image Generation** (prompt-based diffusion model) and **Post-Image Processing** (raster-to-vector conversion).
- Implemented an intelligent prompt engineering pipeline to transform user inputs into structured formats for a fine-tuned **FLUX diffusion model**.
- Applied advanced image processing techniques to convert raster floor plans into precise vector representations.
- Extracted spatial metadata including room labels, dimensions, and color segmentation; stored this data in JSON for AutoCAD/Revit compatibility.
- Enabled direct PNG downloads with annotated dimensions for enhanced usability.

Story Generation Using LSTM and GRU | *Python (TensorFlow, NLTK)*   June 2024

- Built an AI model that generates full stories from short user-provided outlines using sequence models.
- Preprocessed large textual datasets and compared LSTM vs. GRU on coherence and creativity.
- Found GRU to perform better on short sequences due to faster convergence and simpler architecture.

Technical Skills

Languages:Python, C/C++, JavaScript, HTML/CSS
Frameworks: TensorFlow, PyTorch, Keras, LangChain
Developer Tools: Git, VS Code, Visual Studio
Libraries: pandas, NumPy, Matplotlib, OpenCV, Pillow