

# Enhancing LLM4S with Multimodal Capabilities

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[GSoC 2025 Contributor]



# About Me

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# Introduction

- LLM4S = Large Language Models for Scala
- Enables Scala developers to interact with AI models directly from their applications
- Open-source, maintained by the Scala Center & community
- Scala Center – Non-profit organization dedicated to the education and advocacy, of the Scala programming language

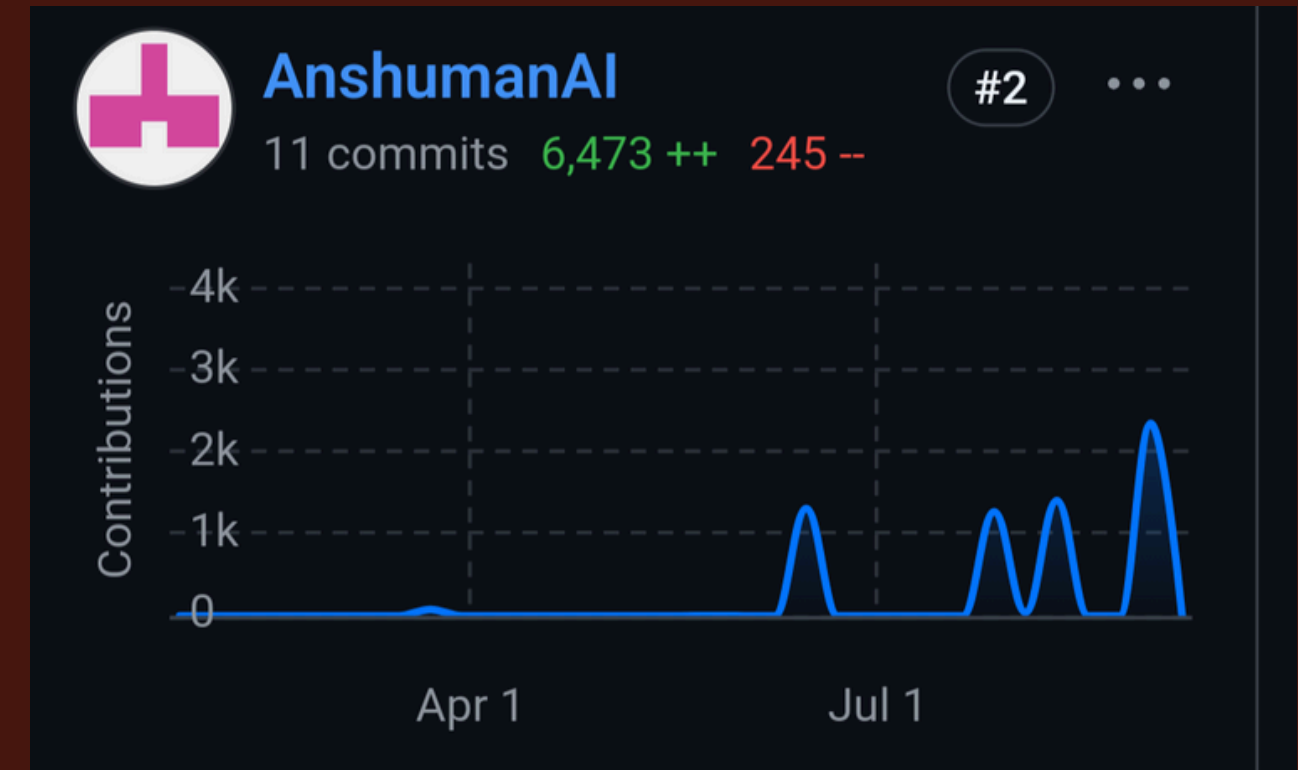
# Project Overview

- **Project Name:** Support image, voice and other LLM Modalities
- **Goal:** Extend LLM4S beyond text to support speech recognition, text-to-speech, and image generation
- **Purpose:** Enable Scala developers to build rich, interactive AI-powered applications

- **Key Deliverables:** Automatic Speech Recognition (ASR) integration , Text-to-Speech (TTS) Module Integration, Image Generation Support, Image Processing Support
- **Impact:** Expands the scope of LLM4S, making it more versatile and developer-friendly
- **Tech Stack:** Scala, Huggingface/OpenAI APIs, Whisper, TTS Engines, Image generation models(Stable Diffusion)

# Contributions

- 13 PRs, 8 Effective Merges, LoC-
- Issues Solved (Non PR): 4
- Delivered Image Generation Capabilities
- Delivered Image Processing Capabilities
- Delivered Text to Speech and Speech to Text Capabilities



# Impact & Future Work

- **Library can now be used to create Rich Apps, good example being Szork.**
- **Szrok is DND style Gen AI game .**
- **Future work : Work on Additional Issues and functionalities.**

# Reflection and Acknowledgment

**Thanks to the community, Mentors (Rory Graves and Kannupriya Kalra) and Scala Center.**