CODE 4 GovTech
Building Digital Public Goods

C4GT DMP - Proposal Template

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Current occupation	Student, Intern at Avicen AI for 1 year
Education Details	Motilal Nehru National Institute of Technology Allahabad, Prayagraj Chemical Engineering
Technical skills with level	**Languages:** JavaScript (Expert), TypeScript (Intermediate), Python (Expert), C++ (Intermediate), HTML (Expert), CSS (Expert) **Developer Tools:** Git, VS Code, Arduino IDE, REST APIs, GitHub Actions (CI/CD), Aceternity UI **Frameworks and Libraries:** React, Next.js, Express.js, Django, Tailwind CSS, Bootstrap, Socket.io **Cloud and Databases:** MongoDB, Azure VM, Neo4J, Google Cloud Run

	AI/ML: Scikit-learn, TensorFlow, **NLP**, ANN, CNN, RNN, **LSTM**, Federated Learning, Vector Embeddings, **LLM Integration, Conversational Agents, AI Agent Design**

1. **Project Overview:**

Title: Building a Conversational, Voice-Powered Story Finder for StoryWeaver

Summary

StoryWeaver is an amazing treasury of kids' stories in so many languages! But at other times, it can be a bit difficult to find the perfect story, particularly if you are looking within your own language or based on a feeling or notion, such as "stories about courage." That is what this project is all about – making the process of discovery enchanting, creating an intelligent assistant that you can have a conversation with, even in Indic languages, and it knows what type of story you are seeking. We'll employ AI, such as robust LLMs and algorithms like vector embeddings (which allow computers to grasp the meaning of words), to interpret questions and label stories so it's incredibly easy for teachers, parents, and children to discover the ideal book.

Project Detail

a. **Understanding of the project**

- My understanding is that, StoryWeaver wishes to make its enormous library of stories much more accessible for people to find. The existing search can be enhanced by introducing more methods of finding stories than keywords. The aim is to create an AI-driven assistant that enables users to search with natural language – speak or type – even in Indic languages. This includes applying AI to automatically label stories with themes and concepts (such as "friendship" or "adventure") so users can search for books by ideas. It also requires a conversational interface that is comfortable to use for various users, such as a teacher searching for specific educational material vs. a child Browse for entertainment. Including voice search, particularly for Indic languages, is a key component of bringing it to more people.

b. Issues that might come up and the support needed from the org

- One of the major challenges will be consistently converting spoken Indic languages into text that the search system can interpret having a good ASR (such as Sarvam APIs or looking at alternatives such as AI4Bharat models) will be crucial. Another important task is training an LLM to read stories and correctly label them with themes, categories, and elements stories may be lengthy, so determining the optimal way to process them for labeling (such as chunking and summarizing) will be critical. We'll also have to integrate with StoryWeaver's current search implementation (ElasticSearch + Vector DB), so knowing how to push our new AI created tags and how to merge keyword search with semantic search will be necessary. Access to the story corpus and knowledge about the current search infrastructure will be needed.

c. Solutions

- My strategy would be to create a backend, probably Python, that manages the various aspects of this assistant. We'll have to implement an ASR service to process the Indic voice input and translate it into English text. For tagging metadata, we will utilize an LLM (such as LLaMA 3.1 or any other appropriate model) and methods such as Tree-of-Thought prompting to study stories and output tags; the processing of long stories may require methods such as dividing them into pieces and summarizing. Vector embeddings will power the search and enable the computer to comprehend search queries and the content of the stories, and not just matching keywords(we can use LSTMs). This will allow a hybrid search strategy, blending keyword matching with semantic search based on the embeddings. We'll construct a tool to deliver these AI-derived tags into the current search database. Last but not least, we'll construct a web-based, chatbot-like interface that is intuitive and can be tweaked slightly based on who's operating it, tying all of these together.

2. Macro Implementation Details with Timelines:

- **Milestone 1: Voice Input & Metadata Pipeline Setup (Weeks 1-4)**
- We'll set up the development environment and integrate the ASR service to process Indic voice input. Concurrently, we'll begin work on the pipeline for generating metadata with LLMs, with the aim of getting the AI to read in stories and generate simple tags, working out how to process longer text.

- **Milestone 2: Search Integration & Embedding (Weeks 5-8)**
- This phase focuses on the search backend. We'll develop the vector embedding process for search queries as well as story content. Then, we'll integrate with StoryWeaver's

search infrastructure, developing the hybrid search logic that incorporates both keywords and vector similarity. We'll develop the tool for pushing the AI-created tags into the search index.

- **Milestone 3: Conversational UI & Testing (Weeks 9-12)**
- Lastly, we will construct the chatbot-like web interface, linking it to the search and voice pipelines. We will fine-tune the UI for various user personas and do testing to make sure the entire flow – from voice input to identifying the proper story based on a thematic query feels effortless and easy for users.

Availability

Number of hours available to dedicate to this project per week	20-25 hours
Do you have any other engagements that will require your time? (projects/internships)	Yes, an internship, but it is going to end soon in this May only

I am flexible with evening and weekend calls for critical discussions or team syncs if necessary, but prefer asynchronous communication for daily updates and task coordination.

Personal Information

*I'm a student who's really passionate about using AI to make technology more interactive and helpful. I've spent time learning about **Natural Language Processing**, the inner workings of models like **Transformers**, and how **LLMs** can understand and generate human language. I enjoy building systems that connect different pieces of technology together using APIs.*

What is your motivation to apply for this project? Answer briefly in 5-10 lines.

This project beautifully brings together some of the domains I'm extremely passionate about: AI for good, language and voice accessibility, and creating conversational interfaces. The concept of assisting children, parents, and teachers to discover stories in their own language easily with an AI assistant that knows themes and concepts is extremely inspiring. I look forward to using my expertise in NLP, LLMs, vector embeddings, and creating AI-driven search to make StoryWeaver even more wonderful and touch more readers.

Previous experience:

Project Name	Project Description	Links (if any)
Chanet	Engineered a high-performance full-stack web application using Next.js and Express.js, integrating Gemini 2.0 for ML model code generation and Kaggle API for dataset recommendation. Achieved high Lighthouse and SEO scores	Live: https://chanet-frontend-974929463300.asia-south2.run.app/ Github: https://github.com/krVatsal/ML-Model-Predictor
Illustrator MCP Server	Constructed an MCP server using FastAPI that converts natural language prompts into vector graphics inside Adobe Illustrator, integrating Claude Desktop for AI-driven design automation. Automated prompt conversion	Github: https://github.com/krVatsal/illustrator-mcp

Avicen AI - Health Consultancy App Backend	Engineered a robust backend for a health consultancy app using Node.js, REST APIs, Sockets, and Express, streamlining user workflows.	https://nostaviahealth.com/ https://www.app.nostaviahealth.com/
CareConnect	A smart, voice-enabled medical web application built to connect users with certified doctors, provide real-time physiotherapy guidance via webcam and hardware(esp32 and mpu6050), and generate intelligent health reports based on user symptoms and posture analysis.	https://github.com/krVatsal/hack36