




- Lakshmipriya Anil
- Fatima Ruba
- Anupam Dhiman
- Pranoy Ghosh
- Tejasvi Bhaskar
- Mohammad Shaheem
- Sayan Karmakar



Problem Statement

Working mothers face a multitude of challenges during the transition from pregnancy to early motherhood, including balancing work responsibilities with childcare duties, accessing reliable maternity-related information, and maintaining their physical and mental well-being. Existing support systems often lack tailored solutions to address the specific needs of this demographic, leading to increased stress and difficulty in effectively managing both professional and parental roles. There is a critical need for an innovative solution that provides personalized assistance, accessible resources, and comprehensive support to empower working mothers in navigating these challenges and enhancing their overall well-being.





Empowering Solutions

- 1. Flexible Work Arrangements:** Encourage employers to offer flexible schedules, remote work options, and part-time roles.
- 2. Maternity Resources:** Provide accessible resources on prenatal care, postpartum health, and parenting.
- 3. Mental Health Support:** Promote counseling services and stress management programs.
- 4. Peer Networks:** Create communities where working mothers can share experiences and support each other.
- 5. Childcare Assistance:** Affordable and reliable childcare options are essential for working parents.

WHAT IS UMMI.AI?

Ummi.AI stands at the forefront of a new era in maternal support by offering a beacon of empowerment and assistance for working mothers navigating the intricate journey from pregnancy to early motherhood. This innovative virtual assistant embodies a fusion of cutting-edge AI technology and compassionate understanding of the unique challenges faced by modern-day mothers.

Gone are the days of frantic juggling between work commitments and childcare responsibilities. Ummi.AI provides a lifeline for overwhelmed mothers, offering timely reminders for prenatal appointments and expertly curated content on maternity-related topics such as breastfeeding, postpartum health, and baby care. Ummi. AI's bedtime story generation and lullaby generation abilities transport little ones to dreamland with enchanting tales and soothing melodies, ensuring peaceful nights for both mother and child. Its smart scheduling tools empower mothers to reclaim control over their time by effortlessly managing work schedules and parental leave with ease and efficiency.

Ummi.AI: Supporting Mamas Every Step of the Way, Your All-in-One Maternal Assistant

1

Need: Recognize the unique challenges faced by working mothers during the transition from pregnancy to early motherhood. This includes managing work responsibilities alongside childcare duties, accessing reliable information on maternity-related topics, and maintaining physical and mental well-being during this critical period.

2

Approach: Develop an AI-powered virtual assistant equipped with a range of features designed specifically for the needs of working mothers such as personalized reminders for prenatal appointments, access to curated content such as breastfeeding and postpartum health, and tools for managing work schedules and parental leave, smart baby monitoring feature, etc.

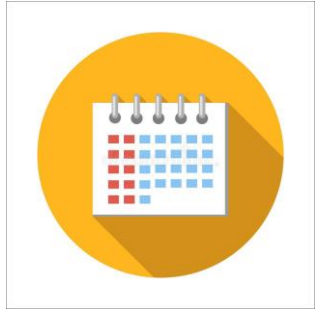
3

Benefit: By providing tailored support and resources, the AI assistant aims to empower working mothers to navigate the demands of both their professional careers and their roles as new parents more effectively. It offers convenience, accessibility, and personalized assistance, helping to alleviate stress and enhance overall well-being.

4

Competition: The AI assistant competes with existing pregnancy and parenting apps, as well as traditional sources of support such as healthcare providers and parenting books. However, its unique focus on the needs of working mothers sets it apart, offering specialized features and support tailored to this demographic.

WHAT MAKES US STAND OUT IN THE MARKET? It's for working mamas



Personalized Reminders
for prenatal check-up
and child immunisation



Curated Content
Access, Bedtime
story and lullaby
generation



Work Schedule
Management



Smart Baby
Monitoring

Umami.AI: Supporting Mamas Every Step of the Way, Your All-in-One Maternal Assistant



DATA COLLECTION APPROACH

1 Initial Approach:

Web Scraping - Blogs, Online pregnancy magazines, Parenting forums

Limitations:

- Overload of Information
- Difficulty in Validating Authenticity

3 Manual Engineering

- Data Refinement Process
- Breakdown into Relevant Topics

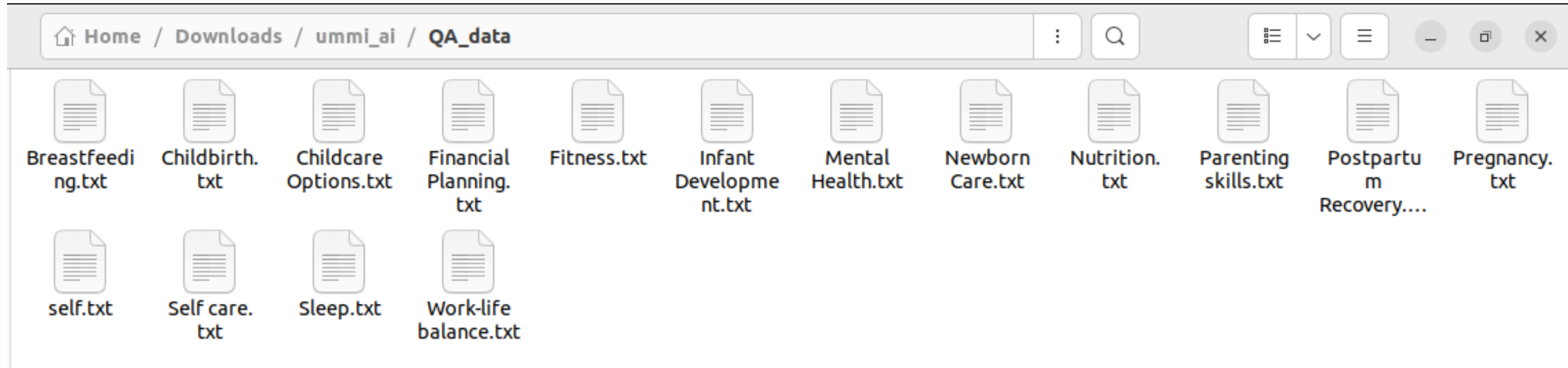
2 Revised Approach: Trusted Sources

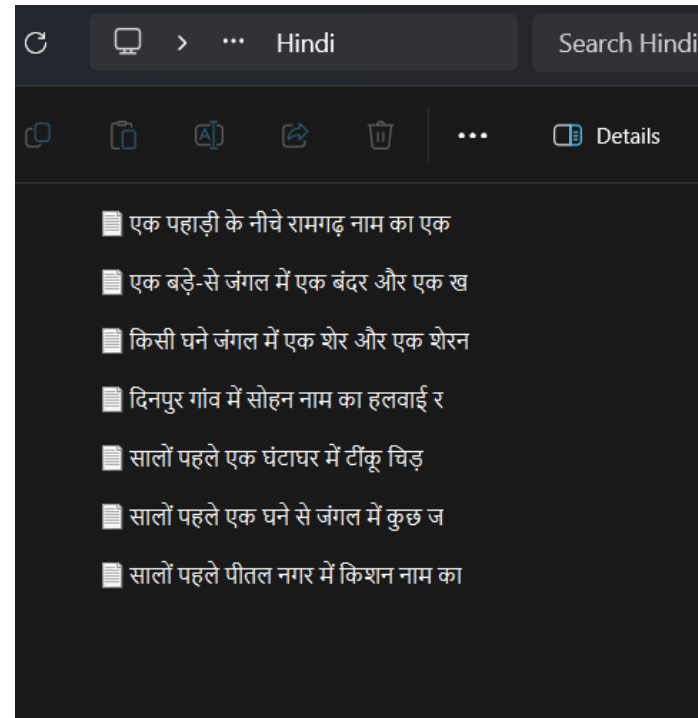
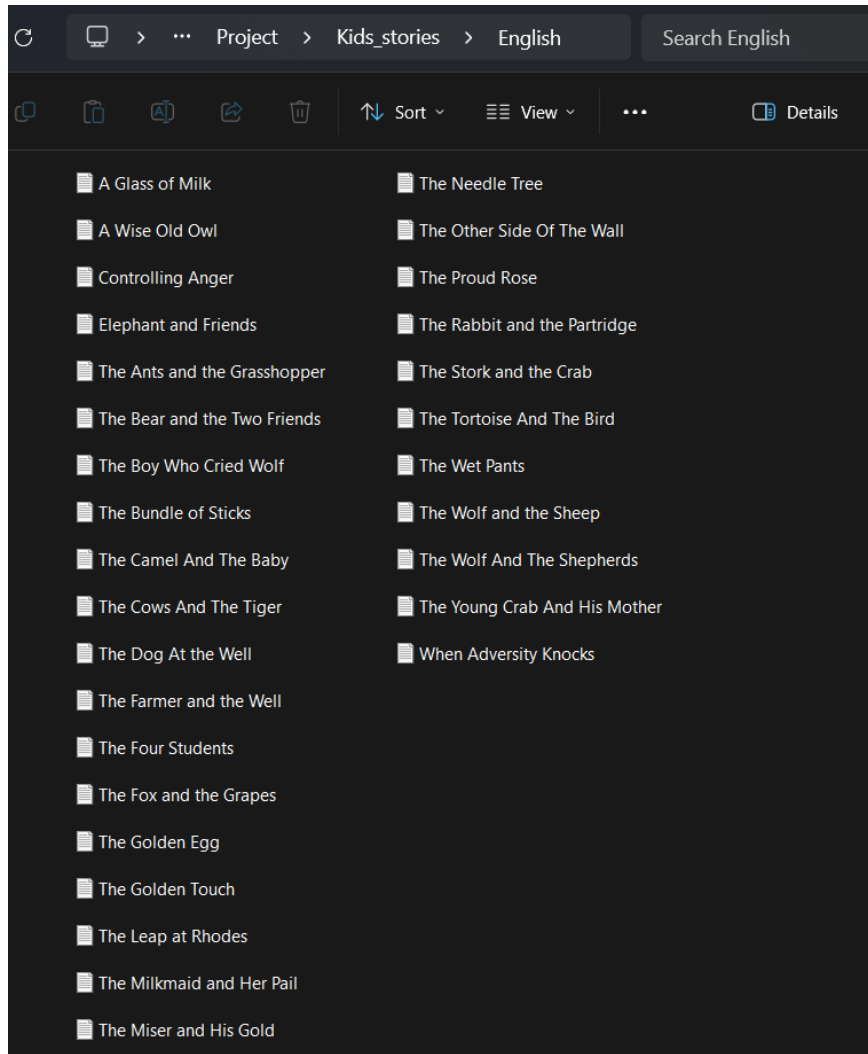
- Academic Journals: Journal of Obstetrics and Gynecology Research, American Journal of Child Nursing
- Medical Databases: PubMed, MEDLINE, and Cochrane Library
- Books by Gynecologists: The Mayo Clinic Guide to a Healthy Pregnancy, The New Mom's Guide to Postpartum Recovery

4 Scope Management

- Preventing Jailbreaks
- Domain-Specific Responses Only

DATA COLLECTION





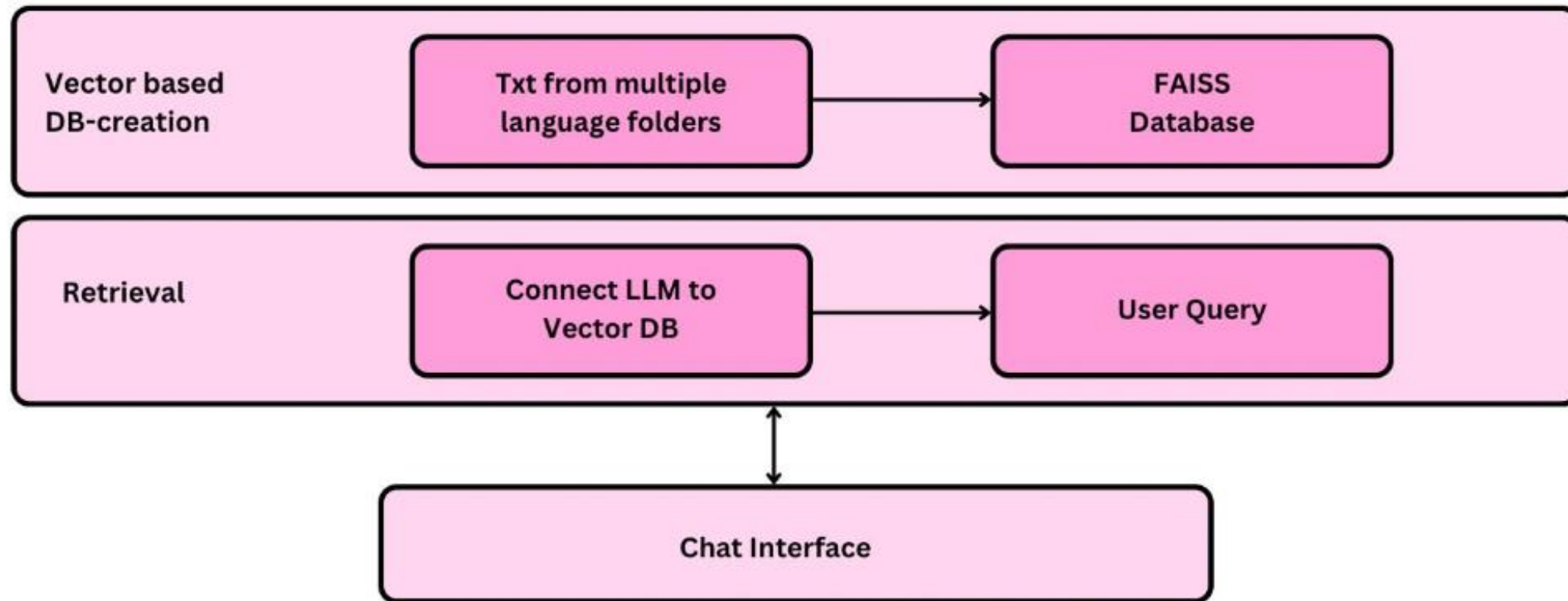
```
1 Question: Who developed you?
2   Answer: I am an AI-powered maternal assistant chatbot designed to provide support and information to expecting and new mothers. My
   development involved a team of tech leaders: Lakshmipriya, Pranoy, Tejasvi, Sayan, Shaheem, Anupam, Fathima.
3
4 Question: Who are you?
5   Answer: I am your maternal assistant chatbot, here to provide guidance and assistance throughout your pregnancy journey and early
   motherhood. Whether you have questions about pregnancy, childbirth, postpartum recovery, newborn care, or parenting, I'm here to help!
6
7 Question: Tell about yourself.
8   Answer: I am your virtual companion, equipped with a wealth of knowledge and resources to support you during pregnancy and motherhood.
   From providing information on prenatal health to offering tips on breastfeeding and infant care, I strive to be a trusted source of guidance
   and support for all your maternal needs.
9
10 Question: How can you assist me today?
11   Answer: Today, I can assist you with any questions or concerns you may have related to pregnancy, childbirth, postpartum recovery,
   newborn care, breastfeeding, infant development, nutrition, fitness, work-life balance, mental health, sleep, parenting skills, childcare
   options, financial planning, and self-care. Feel free to ask me anything!
12
13 Question: What all can you inform me today?
14   Answer: Today, I can provide you with information and guidance on various aspects of pregnancy, childbirth, and early motherhood. Whether
   you're seeking advice on prenatal nutrition, labor and delivery, postpartum recovery, or newborn care, I'm here to offer support and
   assistance.
15
16 Question: Which topics can you help me with?
17   Answer: I can help you with a wide range of topics related to pregnancy, childbirth, and motherhood, including prenatal care, labor and
   delivery, postpartum recovery, newborn care, breastfeeding, infant development, nutrition, fitness, work-life balance, mental health, sleep,
   parenting skills, childcare options, financial planning, and self-care.
18
19 Question: How to end conversation?
20   Answer: To end our conversation, simply let me know by saying TATA or BYE or any variation of goodbye. I'm here whenever you need me, so
   feel free to reach out again whenever you have questions or need assistance.
21
22 Question: outside scope of "pregnancy", "childbirth", "postpartum recovery", "newborn care", or "parenting" & not related to working women
   and mother
23 Answer: I am sorry. I am maternal assistant chatbot. If you have questions about pregnancy, childbirth, postpartum recovery, newborn care,
   or parenting, I'm here to help!.
24
```

METHODOLOGY

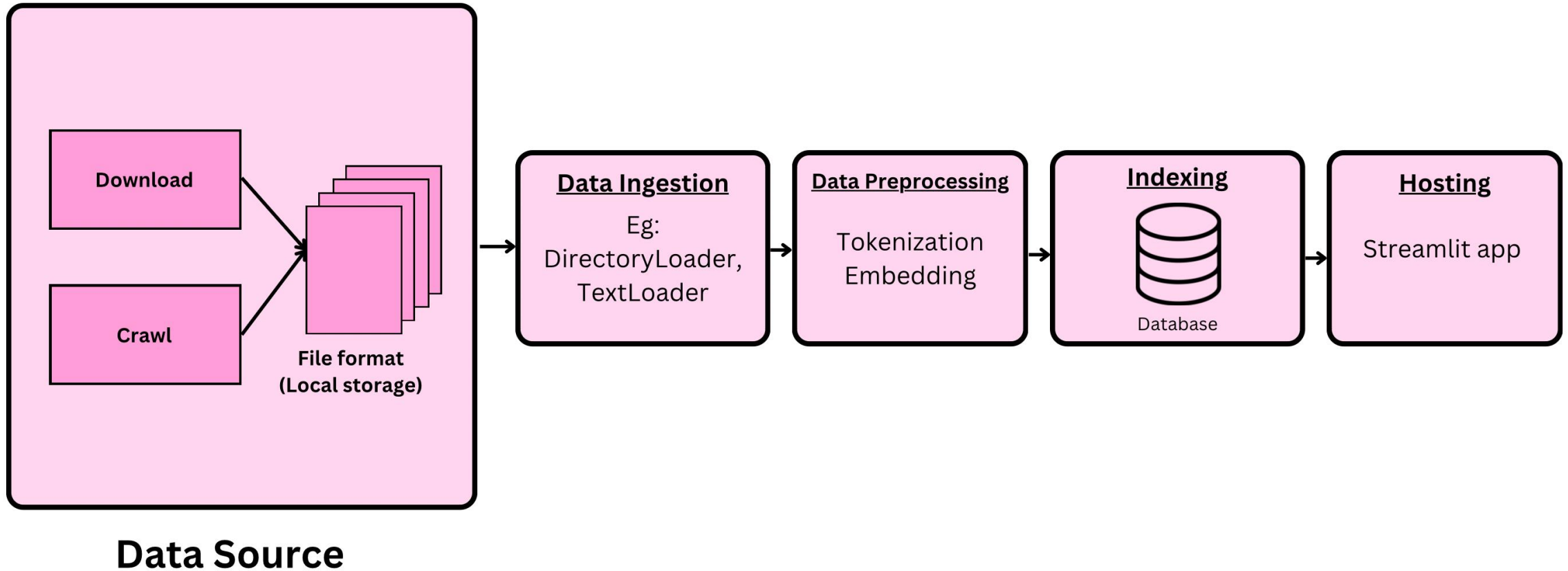
The implementation aims to load documents from directories containing the files, preprocess them by splitting them into smaller chunks and then generating embeddings for these chunks. Finally, the embeddings are indexed into a FAISS (and Chroma) database for efficient similarity search. A retrieval-based passage output and question-answering (QA) chain is configured using LangChain's Retrieval QA class. It utilizes a language model (LLM), a retriever, and a custom prompt template to retrieve relevant information from the knowledge base.

System Architecture

RAG-based implementation for chatbot & story generation



Data Pipeline



USER PERSPECTIVE



Welcome to Ummi.ai

Select a service to continue



Plan your
day.

MaQuery
by ummi.ai

Ask anything.

Stories
by ummi.ai

Tell a story.

Lullaby
Anytime!

Sing or Play
it.

MaQuery
by ummi.ai

Hi! I am Ummi. How can I help you?

You:

How can I hold my newborn safely?

Ask

MaQuery:


Newborns should always be supported and held securely while being fed or during any other activities. It is recommended to hold their head and neck with one hand while supporting their body with the other. Avoid shaking or jerking movements and always make sure their airway is clear. If you are unsure about how to hold your newborn safely, consult with a healthcare provider or a certified caregiver for guidance.

MVP IMPLEMENTATION – QA Chatbot (Choices)

Q. LLM is static – RAG or fine tune or both?

Use Case	Dynamic Vs Static data	External Knowledge	Model Customisation	Reducing Hallucinations	Transparency	Recommendation
Summarization (Specialized Domain & Style)	NA	No	Fine-tuning for adapting style	Less critical due to context	Context offers transparency	Fine-Tuning
Q/A System on Organizational Knowledge	RAG supports frequent updates	Yes	Depending on requirements	Critical due to lack of domain knowledge	RAG offers transparency	RAG (with possible fine-tuning)
Customer Support Chatbots	RAG supports frequent updates	Yes	Fine-tuning for adapting tone and politeness	Critical due to lack of domain knowledge	RAG offers transparency	Fine-Tuning + RAG
Code Generation System	Dynamic codebases benefit RAG	RAG for external codebases	Fine-tuning for code style	Critical for code correctness	RAG offers transparency	Fine-Tuning + RAG

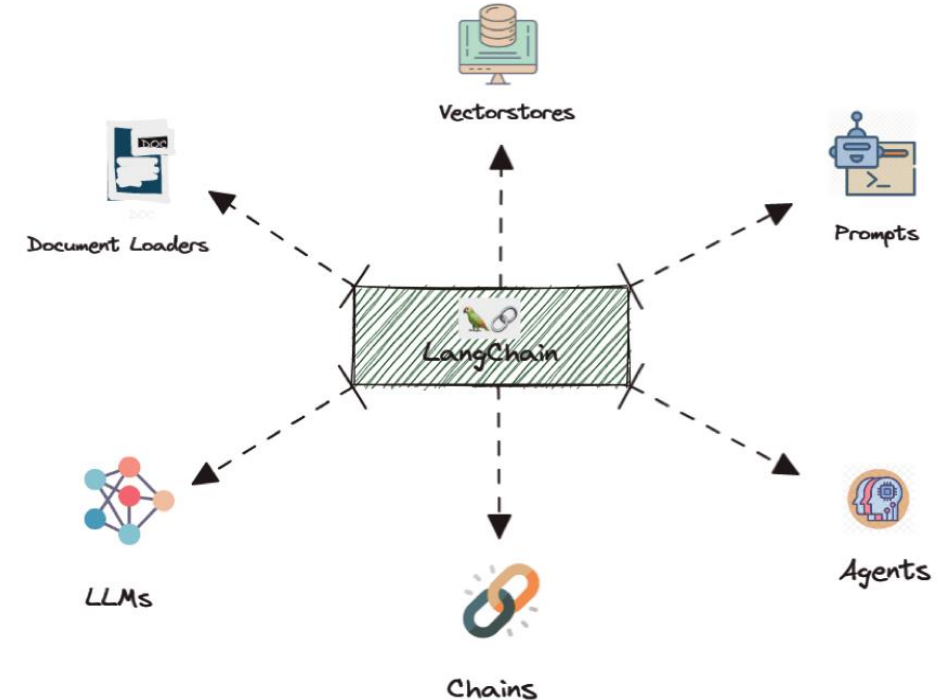
RAG vs Supervised Fine-tune vs Both			
Aspect	RAG	Supervised Finetune	Both
Dynamic data	✓	✗	✓
Static data	✓	✗	✓
Internal Data	✓	✗	✓
Reduce Hallucinations	✓	✓	✓
Transparency of Generation	✓	✗	✓
Fine Tune Smaller Model	✗	✓	✓
Brand Voice in Generation	✗	✓	✓

 Galileo

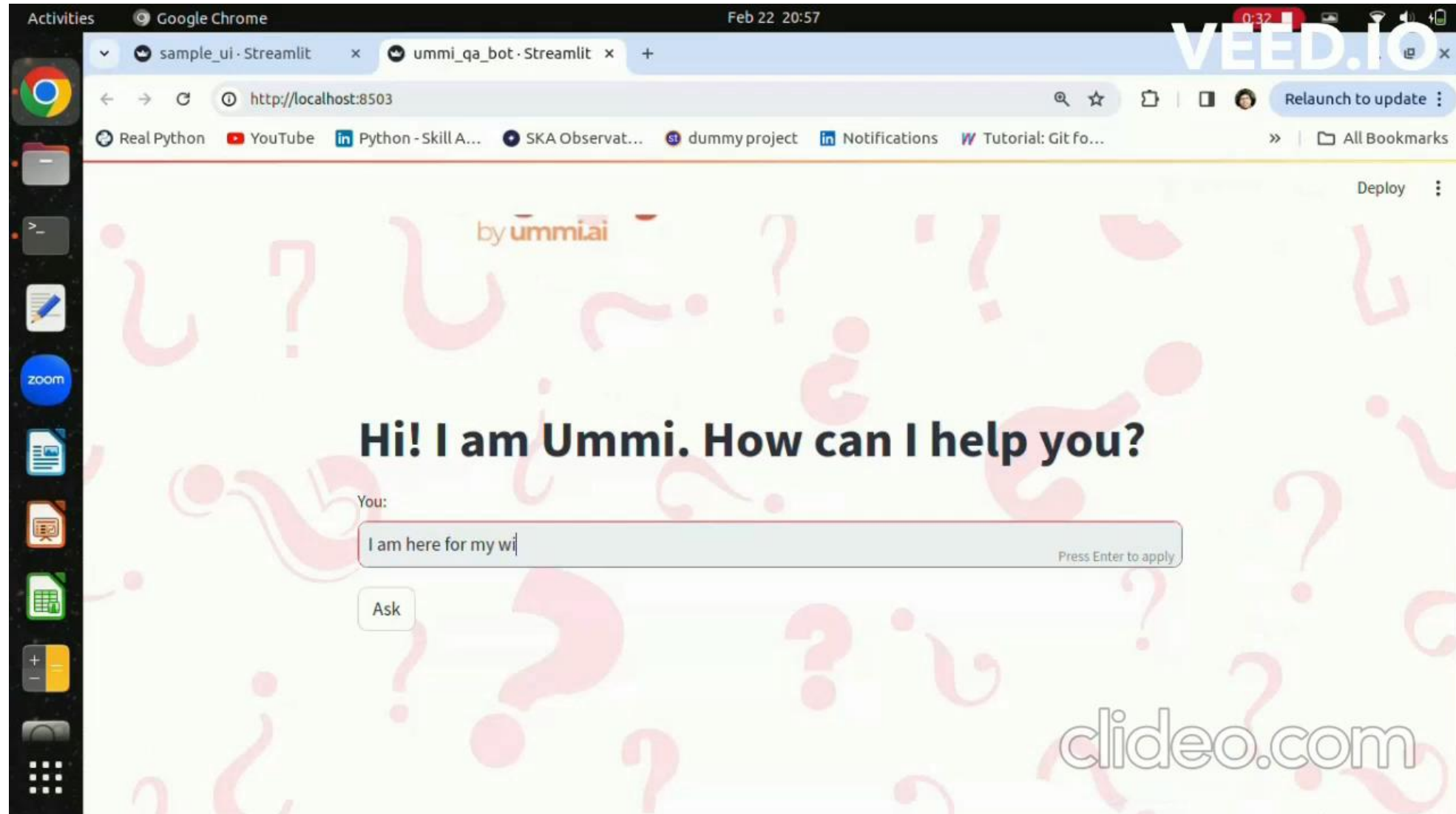
Retrieved from <https://www.rungalileo.io/blog/optimizing-llm-performance-rag-vs-finetune-vs-both>, Accessed on 23rd Feb 2023

MVP IMPLEMENTATION – QA Chatbot (Let's build)

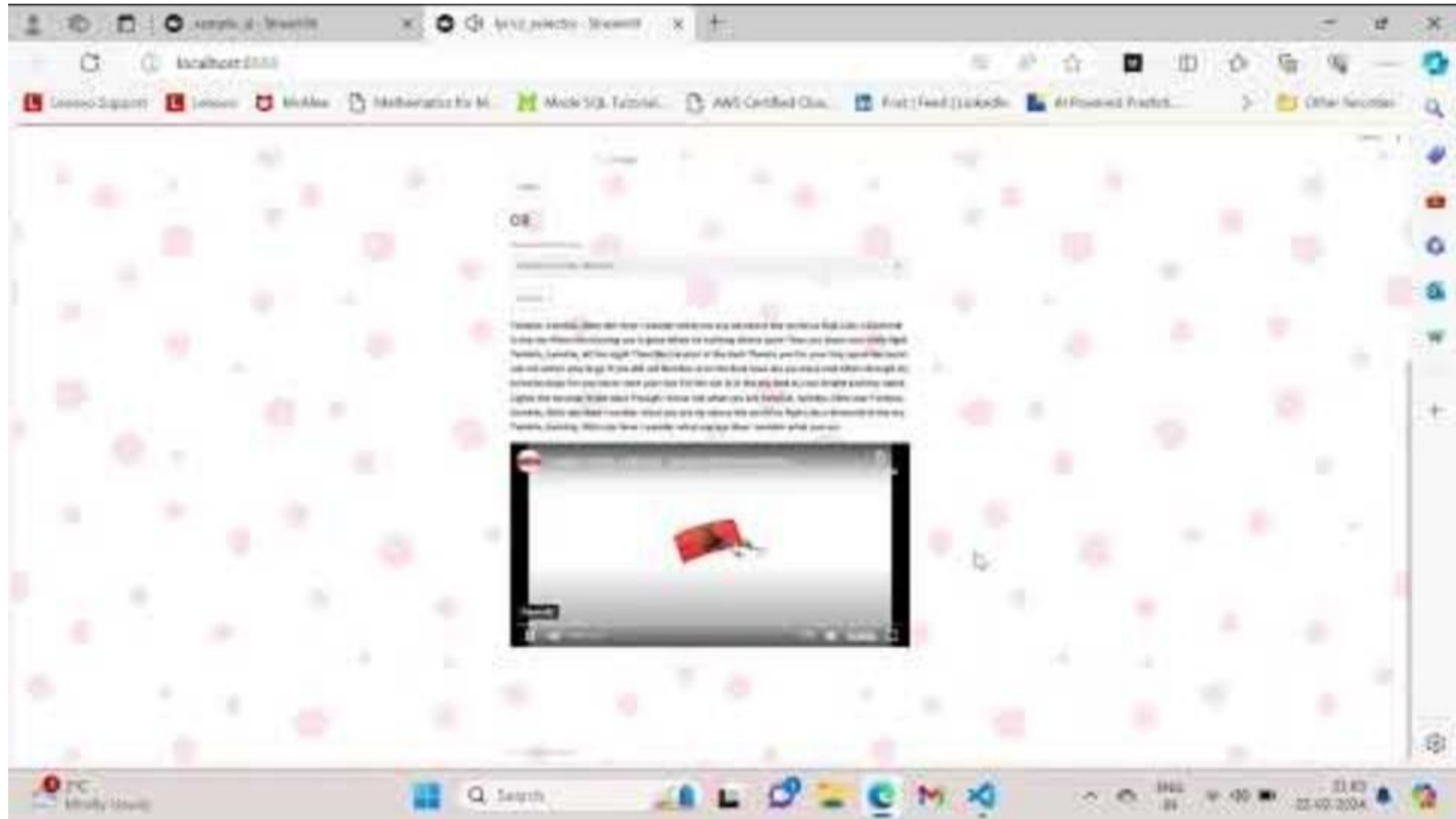
- ❑ OpenAI's Language Model (LLM)
GPT 3.5
- ❑ OpenAI Embeddings for vector representation.
- ❑ Chroma Vector Database is open source
- ❑ Langchain framework – adaptable interfaces.



MVP IMPLEMENTATION – MaQuery (Instant answers for Mama s)



MVP IMPLEMENTATION – Lullaby Anytime



MVP IMPLEMENTATION - Stories



Try out ummi.ai!

The screenshot shows a web browser window with the URL `https://github.com/pranoyghosh35/ummi.ai`. The repository page for `ummi.ai` is displayed, showing the following details:

- Repository Name:** `ummi.ai` (Public)
- Branches:** `main` (1 Branch)
- Tags:** 0 Tags
- Commit History:**

Commit Message	Author	Time
pushing codebase for ummi	Sayankarmakar	2 days ago
pushing codebase for ummi	Sayankarmakar	2 days ago
pushing codebase for ummi	Sayankarmakar	2 days ago
UI edits	Sayankarmakar	17 hours ago
UI edits	Sayankarmakar	17 hours ago
pushing codebase for ummi	Sayankarmakar	2 days ago
UI edits	Sayankarmakar	17 hours ago
UI edits	Sayankarmakar	17 hours ago
- Files:**
 - `QA_data` (Folder)
 - `lyrics` (Folder)
 - `App_selector_page.jpeg` (Image)
 - `Lullaby_Anytime1.png` (Image)
 - `MaQuery1.png` (Image)
 - `README.md` (Text)
 - `Stories1.png` (Image)
 - `api_key.txt` (Text)
- About:** No description, website, or topics provided.
- Releases:** No releases published.
- Packages:** No packages published.



<https://github.com/pranoyghosh35/ummi.ai>

THANK YOU!