



# Google's Women Techmakers presents She Builds AI

Women Safety

SSS\_SarahSafeSpace

## Introduction

"Sarah" is a chatbot designed to be a supportive companion for women who are victims or witnesses of violence, offering emotional support and personalized resources tailored to each individual's unique situation. Recognizing that victims of intra-family violence often feel isolated, Sarah aims to bridge this gap by providing a friendly, accessible, and confidential support system.

Through Sarah, victims can gain a better understanding of their rights, receive guidance on connecting with appropriate professionals, and find the resources they need to take meaningful steps toward safety and healing. By simplifying access to these resources and offering personalized responses, Sarah empowers women to create the life they want, free from violence. Our mission is to ensure that no woman feels alone on her journey to recovery, fostering a safe path forward toward a future filled with resilience and hope.

## Problem Statement

Violence, especially within intimate or family settings, is an insidious reality affecting millions of women globally. In my own experience, I felt this pain firsthand when, at 17, I was sexually assaulted by my ex-boyfriend. Initially, I struggled to understand what had happened to me, but once I recognized it, a heavy sadness and confusion set in. I longed for someone to talk to, someone who could help lighten the emotional weight, but I didn't know who to turn to. In my family, conversations about relationships were taboo, and shame kept me from confiding in my friends. I eventually found solace in a friendship with a woman I met online, someone who, because of her distance from my daily life, offered a safe space for me to open up. Her empathy and understanding helped me in ways I hadn't imagined.

This experience inspired us to create something meaningful, something that could offer others the same kind of support—a compassionate listener who doesn't judge, who provides guidance, and who brings hope of healing. We envision Sarah as that friend, standing by to support victims and witnesses of violence and giving them the resources they need to navigate these painful experiences.

Unfortunately, my story is not unique. In 2022 alone, approximately 48,800 women and girls worldwide were killed by intimate partners or family members, translating to more than five women or girls every hour who lost their lives at the hands of someone within their family.

Furthermore, over 640 million women aged 15 and older—around 26%—have experienced intimate partner violence. This means that 1 in 3 women globally has been subjected to physical or sexual violence, either by an intimate partner or someone outside the relationship.

To create a solution truly rooted in real needs, we interviewed over 50 women who were either survivors or witnesses of violence. Their insights shaped every aspect of the assistant's design, helping us understand not only the practical information they required but also the compassionate support that could make a meaningful difference. This process

taught us how essential it is to connect with the right people, ask meaningful questions, and build a tool that genuinely addresses real-world challenges.

Through these interviews, we learned how difficult it can be for people to recognize the specific forms of violence they are experiencing. They often need relatable examples or direct answers that resonate with their personal experiences. Building trust is crucial; for many, talking to family feels too difficult, but opening up to a friend can offer a powerful first step in their healing journey.

"I faced many difficulties both as a victim and a witness, as there is a certain social pressure to stay silent or let things happen, especially from public institutions. Support for victims is often slow, and frequently, it takes a tragedy to get the necessary protection."

"A better access to information, to redirect people to appropriate support, would allow more help for victims and avoid an ocean of silence and loss."

"People often think that the children of victim support professionals cannot also be victims, but that's not true."

"Sibling violence should also be talked about, as a child hit or beaten by a brother or sister is often told by parents that it's normal so as not to make noise, or they just don't care. In these cases, it's often impossible to escape the situation."

"I thought for a long time that getting slapped as a child was normal; it seems like hitting one's children is normalized and ignored by the justice system except in extreme cases."

"I was lucky to get out of it quickly; talking to friends helped."

"Years of daily insults and devaluation have made it hard for me to build self-confidence."

"I hesitated to see a therapist since I was coming out of a science prep course, which really didn't help either, but I never took the step."

"It's a taboo subject in certain societies, especially in Africa."

"It would be interesting to give examples of intrafamilial violence so that people could see if they relate to it or not. Is a spanking considered violence?"

"This is a situation that is rarely talked about. Domestic violence is often considered physical and happening in a married, more mature couple."

**It's essential for Sarah to respond in a friendly, supportive way, offering words that genuinely comfort and empower victims.** Here are some examples of what Sarah might say to a victim:

- "Violence is prohibited and punishable by law."
- "You are not to blame."
- "The responsibility lies entirely with the aggressor."
- "I believe you."
- "Help is available."

**How to Reach Out to a Victim:** Show kindness and empathy. Express genuine concern about what you've noticed, and, if applicable, convey your worry for her and her children.

Listen without judgment to whatever the victim confides. Avoid questioning or doubting her account, and instead offer tangible support, such as:

- Accompanying her to the police or helping her reach out to a support organization.
- Safeguarding her essential personal documents.
- Offering your testimony if she decides to pursue legal action.

Assure her that you believe her story, and remind her that breaking free from violence is possible.

## How to Use the Project

Users can message Sarah to share their feelings, discuss experiences, or seek advice on specific situations they may be facing. Sarah is designed to listen attentively, offer empathetic responses, and provide emotional support, creating a safe and judgment-free space. By weaving in relevant information from verified resources, Sarah offers users guidance and empowers them with actionable steps.

Sarah's responses include practical resources, such as emergency contact numbers and supportive organizations across 14 countries, tailored to where the user is located. This ensures that users have access to reliable support, regardless of their location. Sarah has compiled a wealth of information on the dynamics of violence, psychological insights, and actionable steps for various situations, available for users from all countries, with specific emergency contact details for the following 14 countries:

- France
- United States
- United Kingdom
- Australia
- Italy
- Morocco
- Spain
- Germany
- Turkey
- Egypt
- India
- Russia
- Canada
- Ireland

All interactions with Sarah are conducted in English, ensuring consistency and accessibility. Women can speak freely, without fear of judgment or repercussion, knowing that their experiences will be received with empathy and respect

## Technical Overview

This project employs Retrieval-Augmented Generation (RAG), a sophisticated method that combines large language models with information retrieval to enhance response accuracy and contextual depth. RAG enables the language model to actively retrieve and integrate relevant information from a knowledge base, thus improving response quality by grounding generated outputs in real-world data. In this implementation, a PDF document serves as the knowledge base, containing detailed information on sensitive topics such as domestic violence and support resources. This document is transformed into manageable, semantically enriched chunks that the assistant references in its responses.

## Code Functionality

The core functionality of this project revolves around creating a conversational assistant that provides both emotional support and practical guidance. Here's a breakdown of the main components:

### 1. Document Loading and Splitting:

The document is first loaded using `PyPDFLoader` and then split into smaller chunks through the `RecursiveCharacterTextSplitter` from the LangChain library. These smaller chunks ensure that information retrieval remains fast and contextually accurate, as each chunk encapsulates focused segments of information.

### 2. Embedding and Vector Store:

The document chunks are embedded using Google's Generative AI embeddings, creating semantic representations of each chunk. These embeddings are then stored in a Chroma vector store, enabling quick and relevant retrieval of information based on user queries.

### 3. Conversational Chain:

Using the `ConversationalRetrievalChain`, we combine the generative language model, the retriever, conversation memory, and a custom prompt template to create a seamless conversational experience. This setup allows the assistant to maintain context across interactions, which is particularly beneficial for supporting users in extended or complex dialogues.

#### 4. Custom Prompt Template:

A carefully crafted prompt template incorporates the conversation history, retrieved context, and the current user query. This template guides the assistant's responses to be both emotionally supportive and practically useful, providing users with balanced guidance tailored to their needs.

#### 5. Gradio Interface:

A user-friendly chat interface is created using Gradio. presents a welcoming, users can interact with the assistant through typed questions or select pre-set examples. The Gradio theming capabilities, particularly the soft color palette, reinforce a calm and non-judgmental space.

## Google Products and Benefits

This project leverages multiple Google products that enhance both the functionality and performance of the assistant:

#### 1. Google Generative AI:

The ``ChatGoogleGenerativeAI`` and ``GoogleGenerativeAIEmbeddings`` from the ``langchain_google_genai`` library are the foundation of the assistant's conversational abilities. With Gemini, Google's advanced language model, the assistant can generate high-quality, contextually aware responses that draw on both the user's input and the retrieved document chunks.

#### 2. Gemini API:

The assistant accesses the Gemini model through an API key, enabling it to leverage state-of-the-art natural language processing from Google's Generative AI. Gemini enhances the assistant's ability to handle nuanced queries with appropriate empathy and precision, particularly in sensitive areas.

#### 3. Google Colab:

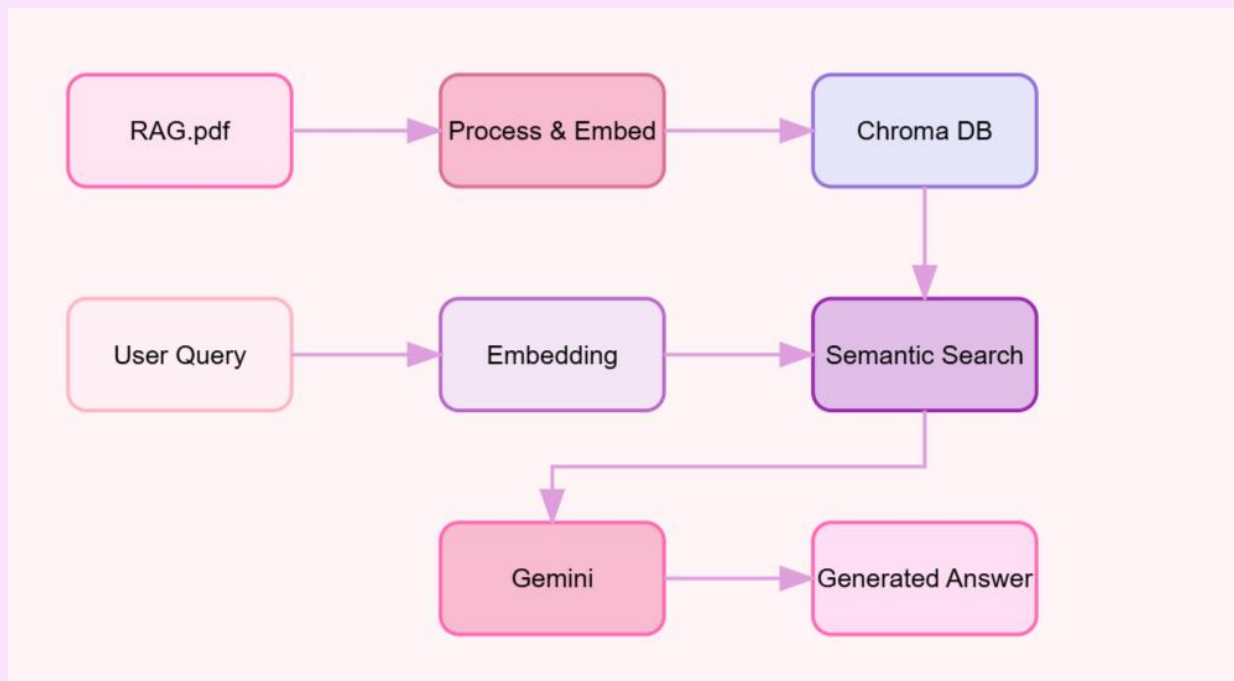
Google Colab serves as the execution environment, providing a T4 GPU for accelerated processing. Colab's cloud-based setup simplifies development and enables faster model inference, making it ideal for computationally intensive tasks involved in RAG implementations.

## Benefits of Using Google's Products

The integration of Google's advanced AI technologies brings several key advantages:

- **Enhanced Response Quality:** Gemini's sophisticated language capabilities allow the assistant to generate nuanced, relevant, and supportive responses that align well with user needs.
- **Efficient Retrieval with AI Embeddings:** Google's embeddings enable the assistant to retrieve highly relevant context from the knowledge base, grounding responses in reliable information.
- **Computational Efficiency:** Colab's T4 GPU allows for efficient execution of resource-heavy processes, such as model inference, ensuring that the assistant can handle complex dialogues in real time.

This combination of RAG, Google's Generative AI, and Google Colab creates a robust, responsive assistant that is well-equipped to provide grounded, compassionate support in a user-friendly interface. The thoughtful use of technology and structured prompt engineering allows the assistant to engage users meaningfully, providing both validation and actionable guidance for those in need





## Team Skills and Collaboration

### **Imen Mehigueni : France**

currently pursuing a Bachelor's in Technology and Management at ESILV. As a reservist in the French Army and an advocate for women facing violence, I'm committed to creating meaningful social impact. For two years, I've volunteered to support women affected by violence, which drives my passion for building solutions that make a real difference. With a background in languages and business, I bring a diverse perspective, positivity, and creativity to every project.

### **Sema Abdelnasser Helali : Egypt**

A passionate and innovative Data Engineer with a strong foundation in AI and Data Science, I specialize in building scalable solutions that leverage emerging technologies. My goal is to drive impactful change by continuously learning and applying my expertise to diverse and meaningful projects.

We are a team of just two women on this project, which has meant a lot of work, but our complementary skills have worked exceptionally well for this hackathon. Working as an international team and often communicating in a language that wasn't our native tongue added a layer of complexity, especially while managing this project alongside our busy lives. However, we were united by a shared goal: to create something that genuinely helps women experiencing violence.

With this common purpose in mind, we quickly organized ourselves to optimize productivity. By recognizing each team member's strengths and areas where we needed support, we effectively divided tasks, enabling us to work efficiently and bring Sarah to life in the best way possible. Our collaboration has been a perfect balance of creativity, technical expertise, and passion for making a real difference.

## Vision for the Future

Our next steps for "Sarah" focus on expanding her capabilities to better serve and support users. We're working to enhance her database of local resources, add multilingual support, and improve her ability to assess the urgency of user queries. By refining our RAG (Retrieval-Augmented Generation) techniques, we aim to increase response accuracy. We also plan to explore partnerships with local support organizations, giving users access to a broader range of resources. On our roadmap are improvements to the user interface and the addition of even more robust safety features.

Testing "Sarah" with a wider audience is another key priority. We're thrilled that two organizations dedicated to supporting victims of violence have already agreed to pilot the chatbot and provide invaluable feedback. We understand that crafting effective, empathetic responses is a continuous effort, and we're committed to putting in the work to make "Sarah" as supportive and impactful as possible.

## Gratitude for Google's Women Techmakers She Builds AI Global Hackathon

Participating in Google's Women Techmakers She Builds AI global hackathon has been transformative for us. It's more than just an opportunity to create—it's been a journey of growth, collaboration, and discovery. This experience challenged us to think deeply about the impact of AI and how we can use it to support and empower others. We've learned so much, not only about technology but also about ourselves, our abilities, and the power of community.

The hackathon has brought us into a network of like-minded individuals passionate about using tech for good, and it's given us the encouragement to keep pushing forward. We are deeply grateful for this experience and the platform it has provided to bring "Sarah" to life.