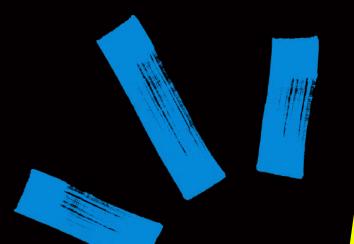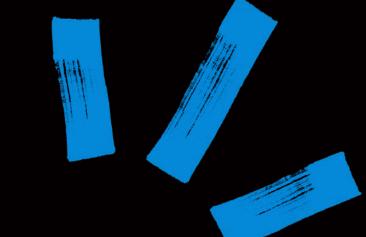# Welcome To Our Final Year Project Presentation!

'SAM': THE PERSONAL VOICE ASSISTANT

Try Pitch

Meet the Team

1. Abinash Samal – 21051109

2. Akanksha Rath – 21051195

3. Giridhar Gopal – 21052758

Under the guidance of

Prof. Abhishek Raj

Contents:

1. Introduction
2. Glimpse of Code
3. Working of SAM
4. Features of SAM
5. Demo videos
6. How is it different from other AI assistants?
7. Future Scope
8. Closing Thoughts
9. References

Try Pitch

Introduction:

- In today's AI-driven world, personal voice assistants are transforming how we interact with technology.
- SAM – Personal Voice Assistant for Mac & Windows is designed to enhance user experience by combining intelligence with convenience.
- From retrieving real-time information to managing system controls, SAM simplifies interactions with just a voice command.
- It seamlessly integrates with everyday tasks, offering both advanced and essential functionalities.

Glimpse of Code:

- In our code we have used several modules for - voice capturing, internet exploring, inter-operable mechanisms, weather report, relational expressions, GenAI, etc.

- For voice capturing, we have used speech_recognition module which is widely known .

```python
import wikipedia
wikipedia.set_lang("en")
import webbrowser
import os
import pyautogui
import time
import subprocess
import requests
import cv2
import re
import google.generativeai as genai


# Initialize pyttsx3 with macOS voice engine
engine = pyttsx3.init('nsss')  # Use 'nsss' for Mac, 'sapi5' for Windows

# Wake word for Jasmin
WAKE_WORDS = ["sam","he sam", "hey sam", "hello sam", "hi sam","sham","he sham", "hey sham", "hello sham"]

50 usages
def speak(audio):
    """Converts text to speech and adds pauses after punctuation."""
    global is_speaking
    engine.setProperty( name: 'rate', value: 160)  # Set speech rate
    audio_with_pauses = re.sub( pattern: r'([.,!?])', repl: r'\1 ', audio)  # Add space after punctuation
    is_speaking = True
```

Working of SAM:

- We have integrated wake-up calls for "SAM", to recognise the commands given and respond accordingly. So it is important to say "SAM" before giving any command.

- listen_for_wake_word() - takes input the audio captured by speech_recognition and once captures the text , it finds for wake_words, and then tries to recognise and gives response.

- To exit from SAM, you have to say "Hey SAM bye" or "Hey SAM exit".

```python
1 usage
def listen_for_wake_word():
    """Continuously listens for wake word and checks if a command follows."""
    while True:
        query = takeCommand().lower()
        print(f"Received: {query}")

        for wake_word in WAKE_WORDS:
            if query.startswith(wake_word):
                command = query.replace(wake_word, _new: "").strip()
                if command:
                    processCommand(command)
                else:
                    speak("How can I assist you?")
                    command = takeCommand().lower()
                    processCommand(command)
                return
```

Try Pitch

Features of SAM

1. **Time :** We have added DateTime module in-order to get accurate date or time details when asked from SAM, also greetings from SAM is determined like - Good Evening.

2. **Volume Control :** We can control volume directly with SAM's volume control mechanism. We just need to say "Hey SAM increase volume" or " Hey SAM decrease volume" and our work will be done.

3. **Screenshot :** By saying "Hey SAM take a screenshot" , we can take screenshot directly and that is saved in a folder .

```
User said: hey Sam what is the time

Received: hey sam what is the time
Speaking: Sir,  the time is 22:07:05
Listening...
```

```
User said: hey Sam increase volume

Received: hey sam increase volume
Speaking: Volume increased.
Listening...
```

```
User said: yes I am take a screenshot

Received: yes i am take a screenshot
Speaking: Screenshot taken.
Listening...
```

Try Pitch

4. **Screen Recording**: It will start screen recording when you give the command and when you say it to stop, it will stop and save it in the designated folder.

5. **Front Camera**: When you say " Take my Picture" , it will take one selfie of you from front camera and save it.

6. **Note**: When you say "Please make a note...." and speak your important thing, it will note it down and save it.

7. **Opening and Closing Apps**: When we say "Open <app_name>" it will open any app you have , and when we say "Close <app_name>" it will close it.

```
Recognizing...
User said: hey Shyam please make a note it was a wonderful day on April 1 2025

Received: hey shyam please make a note it was a wonderful day on april 1 2025
Speaking: I have noted it down.
Note added: it was a wonderful day on april 1 2025
```

Saved in Notes

```
when the parlour women ask me about how should i make the gifts in the
to have my braces in marathi and faction
[2025-03-18 21:24:29] in this world of very selfish people i got some
but they want to be selfish
[2025-04-01 22:42:07] it was a wonderful day on 1st of april 2025
[2025-04-01 22:50:22] it was a wonderful day on april 1 2025
```

```
User said: hey Sam open spoti

Received: hey sam open spotif
Speaking: Okay,  opening spot
Listening...
```

8. Weather : We have integrated API of 'openweathermap' into SAM , so whenever you ask SAM "How is the weather?" it would ask us the city name and then provide us weather details of that city.

```
User said: hey Sam how is the weather

Received: hey sam how is the weather
Speaking: Please tell me your city name.
Listening...
Recognizing...
User said: Bhubaneswar

API Response: {'coord': {'lon': 85.8333, 'lat': 20.2333}, 'weather': [{'id': 800, 'main': 'Clear',
Speaking: The weather in Bhubaneswar is 26. 42°C with clear sky.
Listening...
```

9. Wikipedia : We have integrated wikipedia module to search for and give accurate response when we say "Hey SAM search for <whatever-we-need-to-know> in wikipedia".

```
User said: hey Sam search for Ronaldo in Wikipedia

Received: hey sam search for ronaldo in wikipedia
Speaking: Searching Wikipedia. . .
Speaking: According to Wikipedia
Ronald is a masculine given name derived from the Old Norse Rögnvaldr, or possib
Speaking: Ronald is a masculine given name derived from the Old Norse Rögnvaldr,
```

10. Calculation: We have integrated regular expressions into SAM, thus when we say "Hey SAM calculate <regular expression>", it will provide us the output as follows.

```
User said: hey Sam do 5 + 10 - 20 + 5 - 2 x 10

Received: hey sam do 5 + 10 - 20 + 5 - 2 x 10
Speaking: The result is -20
Calculation Result: -20
Listening...
Recognizing...
User said: calculate kar to sahi kiya kya
```

11. Ask Gemini : We have also integrated Gemini API into SAM so that you can go from normal assistance to online powerful search assistance in a blink.

~When we say "Hey SAM ask AI", it converts to Gemini mode. Now we can directly ask questions without saying "Hey SAM".

~As we can see, we have got desired the output.

~After we get our desired response if we want to come back at SAM, we can say " Hey SAM come back" which will take us to SAM assistant mode and exit Gemini mode.

```
Listening...
Recognizing...
User said: hey Sam ask AI

Received: hey sam ask ai
Speaking:  Gemini is ONLINE What would you like to ask the AI?
```

```
Listening...
Recognizing...
User said: who created Taj Mahal

User Question: who created taj mahal
Speaking: The Taj Mahal was created by Mughal Emperor Shah Jahan.
```

```
User Question: who created taj mahal
Speaking: The Taj Mahal was created by Mughal Emperor Shah Jahan.
Important Key Points:
- The Taj Mahal was created by Mughal Emperor Shah Jahan.
```

```
User said: hey Sam come back

User Question: hey sam come back
Speaking: Returning to assistant mode.
Speaking: Did you ask something?
Listening...
```

12. DeepSeek : We have also integrated DeepSeek API into SAM so that you can go from normal assistance to offline AI powerful search assistance which is in your device inbuilt which assists you with all computer programming things.

```
Listening...
Recognizing...
Received: hello sam ask deep seek
[Assistant]: Now you are interacting with DeepSeek,  what do you want to know?
```

~ DeepSeek R1 is used in SAM using ollama application reference with terminal. It helps us to work efficiently even if internet is not there but we need some AI assistance to keep the work-flow intact.

```
Listening...
Recognizing...
User Question: how can i create a model of deep seek
[Assistant]: Creating an AI platform for DeepSeek involves several steps which are not directly related to computer science but could

Here's how you might approach it using Python and Flask (a web framework),  a popular choice of technology:

1.  **Setup Environment** - First,  make sure that your environment is set up for developing AI models with DeepSeek platform accordi
2.  **Data Collection & Preprocessing** - You should collect relevant data related to deep learning,  machine learning models that wi
3.  **Model Creation** - Use a suitable deep learning library such as TensorFlow,  PyTorch for Python to create models/architectures
4.  **Train Your Model** - Split your data into a training set,  validation set (which is usually 10% of total),  test set to be used
5.  **Deployment** - Once you're satisfied with your models,  the next step is deployment which can take place in a number of ways de
```

Try Pitch

Demo Videos:

To demonstrate some of the features of SAM, we have made 2 videos, kindly go through it.

For MAC -

https://www.loom.com/share/132ef25d2f304cf1b29f759c8e208fbe?sid=7535ff7c-0785-4b82-ba95-ca5d1099556d

For Windows -

https://www.loom.com/share/bb548608135b469293c902d4795693d1?sid=b00b8130-52a4-4461-92ef-573579d19b69

Try Pitch

<u>How is it different from other AI assistants?</u>

- First of all, "SAM" can open and close all kinds of apps supported in windows and iOS . So cross platform compatibility adds up to its amazing features.

- "SAM" supports both online and offline mode.

- Online mode consists of direct API connectivity with gemini-2.0-flash.

- Offline mode consists of DeepSeek R1 mini model made into the system itself, which will allow offline personal assistance.

- "SAM" doesn't keep all the data spoken by user and voilate consumer rights, it takes only that much data, which is permissible.

Try Pitch

Future Scope:

- Implement advanced NLP models (like GPT-4 or BERT) for better understanding of complex user queries.
- Enhance contextual understanding to allow follow-up conversations instead of processing commands in isolation.
- Extend support for mobile platforms (Android/iOS) using frameworks like Kivy or Flutter.
- Develop a web-based version that can run on browsers using Flask or Django.

Try Pitch

Closing Thoughts: A Note of Gratitude

- SAM – Personal Voice Assistant is a step toward smarter, more efficient digital interactions.

- As technology evolves, SAM has the potential to expand further, incorporating more advanced features and improving user experience.

- It has been made from scratch with a lot of hardwork and dedication, especially from our team leader, **Abinash**!

- Also, a huge thank you to our project-in-charge, Prof. Abhishek Raj. He has been nothing but a great pillar of support and strength, without his feedback and encouragement, we would have been nowhere.

Try Pitch

References:

Reference 1

Reference 2

THANK YOU FOR YOUR TIME!

FEEDBACK?