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**[NIA, REMIND ME! - AI PERSONAL ASSISTANT SYSTEM]**

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## ABSTRACT

Artificial intelligence (AI) describes about the simulation of human intelligence in a programmed machine or system software to think like a human and mimic its actions. The term can also be used to denote machine properties related to the human mind such as learning and problem solving. One of the problems faced by the human is in organizing their daily tasks as they have many task to work on in daily which tend to make them forget easily. Kendra Cherry(2021) stated that research has found that information is forgotten within an hour approximately by 56%, after a day up to 66% , and after six days increase to 75% and more. As for solution to this problem, AI personal assistant system is a good idea which can assist human do thier daily task easily by reminding them daily or at certain hours, allowing human/user to receive relevant information and make recommendations based on calendar and alarm/alert as for speak able reminder. Several fact findings techniques used for collecting data and information such as observation, research, interview with people surrounding about their daily task and how they schedule or organize the tasks to make sure that it can be completed within the day or time. It is found that both people that live alone or with family having unorganized schedule to complete their daily task. Furthermore, not everyone can afford to buy ai personal assistant like Alexa, Siri, Amazon Echo as their assistant as these products have various sophistication and abilities that are sold at high prices according to their specifications. Hence, this Nia AI personal assistant system small the scope of price and abilities which make it more focused on scheduling the daily task.

## ABSTRAK

Kecerdasan buatan (AI) menerangkan tentang simulasi kecerdasan manusia dalam sistem mesin atau perisian yang diprogramkan untuk berfikir seperti manusia dan meniru tindakannya. Istilah ini juga boleh digunakan untuk menunjukkan sifat mesin yang berkaitan dengan minda manusia seperti pembelajaran dan penyelesaian masalah. Salah satu masalah yang dihadapi oleh manusia adalah dengan mengatur tugas harian mereka kerana mereka mempunyai banyak tugas yang harus diselesaikan dalam sehari-hari yang cenderung membuat mereka lupa dengan mudah. Kendra Cherry (2021) menyatakan bahawa penyelidikan mendapati bahawa maklumat dilupakan dalam satu jam lebih kurang 56%, setelah sehari hingga 66%, dan setelah enam hari meningkat menjadi 75% dan lebih. Bagi penyelesaian masalah ini, sistem pembantu peribadi AI adalah idea yang baik yang dapat membantu manusia melakukan tugas harian mereka dengan mudah dengan mengingatkan mereka setiap hari atau pada waktu tertentu, yang membolehkan manusia / pengguna menerima maklumat yang relevan dan membuat cadangan berdasarkan kalendar dan penggera / amaran untuk peringatan boleh bercakap. Beberapa teknik penemuan fakta yang digunakan untuk mengumpulkan data dan maklumat seperti pemerhatian, penyelidikan, wawancara dengan orang-orang di sekitarnya mengenai tugas harian mereka dan bagaimana mereka menjadualkan atau mengatur tugas-tugas untuk memastikan bahawa ia dapat diselesaikan dalam sehari atau waktu. Didapati bahawa kedua-dua orang yang tinggal bersendirian atau bersama keluarga mempunyai jadual yang tidak tersusun untuk menyelesaikan tugas harian mereka. Tambahan pula, tidak semua orang mampu membeli pembantu peribadi seperti Alexa, Siri, Amazon Echo sebagai pembantu mereka kerana produk ini mempunyai pelbagai kecanggihan dan kebolehan yang dijual dengan harga tinggi mengikut spesifikasi mereka. Oleh itu, sistem pembantu peribadi Nia AI ini mengecilkan skop harga dan kemampuan yang menjadikannya lebih fokus pada penjadualan tugas harian.

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## LIST OF ABBREVIATIONS

<b>FYP</b>	-	<b>Final Year Project</b>
<b>API</b>	-	<b>Application Program Interface</b>
<b>NIA</b>	-	<b>Nice In Assist</b>



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## **CHAPTER 1: INTRODUCTION**

In this new era of globalization, gadgets like smartphone, tablet, laptop and smartwatch have been widely used for continuing living in daily life. But how many of them can benefit those gadgets to schedule their daily life task? What are the problems faced by them in order to have an organized daily task? There are also so many applications developed but did all of it able to satisfy user requirements and wants. If we talk about Siri, its already can be a complete assistant but only to Apple users. If we talk about android user, they have Google Assistant app to assist but this type of smart assistant would not work without internet connection, high data usable and will heat the mobile. Hence, this project report will document the intention of Nia the smart assistant been development.

### **1.1 PROBLEM STATEMENT**

Human with brain, they tend to forget everything due to some circumstances like ages, health problem, or many tasks need to be done at once. As for student forgetting can leads to disappointing performance on exams. It forces them to retrace the steps or spend hours looking for a misplaced item. For working people, they surely have heavy schedule everyday, therefore there will be tasks or daily activities that need to be delayed if they are not being reminded to manage their activities. Same as others as it may embarrassing some people during important task, activities or mission while working.

### **1.2 OBJECTIVES**

1. To design and develop intelligent voice recognition program with offline connectivity.
2. To develop smart speaker assistant in reminding users.
3. To allow user to receive relevant information by voice command.

### 1.3 SCOPE OF RESEARCH AND PROJECT

- (a) **Input:** Voice command from user
- (b) **Output:** System able to remind human
- (c) **Function:** Scheduling Daily Tasks, Reminding Daily Tasks, Accessing Online Information from various source like wikipedia.
- (d) **Module to be developed:**

#### **Module 1: Voice Recognition**

System should be able to recognise the voice command by using library speech recognition. As the speech or voice command been recognized, the system will convert it to text version. This is for to check whether the speech or voice command delivered is accurate.

#### **Module 2: Speech to Text & Text to Speech**

System should be able to convert from speech to text and text to speech. By using python library for speech recognition process, audio, texttospeech the program will produce speech same as the delivered voice command.

#### **Module 3: AI System Construction Reminder**

System should be able to receive information or command from user for reminder by command the system with date, time and what to do. System also should remind the user by read the noted reminder by using python library for scheduling and timing.

### 1.4 PROJECT SIGNIFICANT

For the significant of the project, this system will be able to help user to manage their daily task and activities. Just say keyword 'remind' to make the system save your tasks on the spot using voice command. This system will not use the internet for reminding the user unless user want to use other speciality like playing song, asking some relevant information. As this system able to remind user, this includes the time, date, and day. This could be a two-way communication as user give voice command in English language and the system will repeat it for confirmation and do the task as command.

## 1.5 EXPECTED OUTCOME

The expected outcome of this project is the system should be able to response to the voice command by user by using English language. User also able to set reminder anytime and the system should be able to read out loud all the reminders that have been set if the user needs an update of their activities. As for voice command on searching task, user need and internet connection and when user want to know about something or someone, system should be able to give the right answer to user. For example, user command to play a horror movie, system should open the YouTube website to play the video directly without any clicks.

## 1.6 CONCLUSION

In conclusion, several activities will be conducted like research, analysis and designing for proceeding this project development, in order to meet user needs and wants. In the next chapter will include the literature review and project methodology, how the system will work, and what terms are involved while implementing the program code.

## **CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY**

The impact of AI system in daily life performance of human have been well researched. Although some research finding outline bad social and emotional of using AI system for assisting human's daily life(Thomas,M.(2021, April 2), Marr,B(2020)), several studies demonstrate a correlation between AI system and human's daily life performance. In everyday life, people get to use with gadget to view time, dates, and days by using apps like calendar and clock to set few of reminder by typing it. But some of them forget to save it after listing all the what-to-do list. From the observation human tend to forget if only read the reminder. Then it might get annoying with repeating reminder with boring sound notification. People nowadays like to hear anything and do it right away. Majority of people like to give command instead of doing the task. Over 1 year, pandemics Corona virus – Covid-19 has spread widely which had affect human's everyday life. As we know that many workers had to speed up their work to finish their project within the dateline. The recent studies have begun to provide insight on how AI system used and assisted have positively affected the life performance of human at all ages.

## **2.1 FACT FINDINGS**

### **2.1.1 Fact Finding Technique**

#### **I. Research**

Research is an in-depth analysis of information that creates space for generating new questions, concepts, and understandings. The main objective of research is to explore the unknown and unlock new possibilities with a careful and detailed study of a particular problem or concern, using scientific methods. How many smart assistants have been built but how much of them are able or suite for everyone? Is it affordable for everyone? As IT sector has been widely use in the world, we as Malaysian are not far behind from their super technology. Malaysian is the country that is in progress to developed countries, especially in technology. Many smart assistants built, but how much of them can suite each person in this world? Like Siri which only been built for Apple user, Cortana by Microsoft but not all regions are available to use it, Google Assistant which only available for certain language and this does not include Malay language.

### **2.1.2 Artificial Intelligence Personal Assistant System Technique Used**

#### **I. Interactive AI**

Users can utilize this form of AI to automate communication without losing interactivity. Consider chatbots and smart personal assistants as examples of this sort of AI, whose capabilities range from answering pre-programmed queries to comprehending the context of a discussion. Another use for interactive AI is to improve a company's internal operations. For example, this project was dedicated to creating a smart personal assistant system to ease human's activities and scheduling daily tasks.

## II. Text AI

Productions of system that use text AI can enjoy machine translation text recognition, speech-to-text alteration and content generation skills. This little technique can still take advantage of this AI type even if a company is not any other giant company like Google, Amazon or others, that provides text AI as a service. Text AI, for example, may be used to fuel an internal corporate knowledge repository Unlike a traditional knowledge base, which relies on keyword searches, an AI-powered knowledge base can discover the document containing the most relevant response even if it lacks full keywords. This is made feasible by semantic search and natural language processing, which enable AI to construct semantic maps and distinguish synonyms in order to comprehend the context of the user's query. Text AI is used in this project to display what user command and what system able to understand from user command.

### 2.1.3 Existing Artificial Intelligence System

#### I. Google Assistant

Google Assistant has specialty on voice searching, voice commands by letting user complete several tasks after user said the "OK Google" or "Hey Google" wake words as voice-activated device control. It is designed for conversational interactions. Google Assistant will control user's devices and smart home. Instead, once any user started talking to Google, a continued conversation will process which means user do not have to say "Hey Google" for follow-up requests without needing a trigger phrase all the time as it listens for a response. There are three key components for each Google Assistant-based system.

Firstly, the device with a microphone, speaker and connected to the internet may have voice assistant access on smartphones, cars, IoT devices and others which include smart TVs. For example, the Google Home pictured enabling an integrated high-excursion speaker with two microphones, to capture and transmit voice communication and audio content.

Secondly is the Google Assistant that interprets speech, determines user intent, and returns spoken results by converting text to speech in one of eight user-chosen voices and also known as cloud-based voice assistant service. Google Assistant app on Android and iOS smartphones, Google Home, and all other devices are using this software and voice behind it.

The last component is Actions On Google. To help users get what they want, each action gives Google Assistant additional capabilities. In some ways, mobile apps are also Action and in other ways they are more similar to web pages. Actions are enabling the user experience and what they build to engage consumers.



Figure 1: Google Assistant system



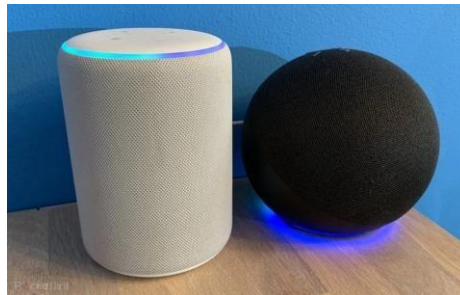
## II. Alexa

Designed around Amazon's own Echo devices, Alexa is the first and leading smart assistant device. The Amazon Echo range includes all speakers which are standard Echo, Echo Studio, Echo Plus, and Echo Dot, and device that support display features Echo Show, Echo Show 5, Echo Show 8, and Echo Spot. It is built to be able to give user visual feedback, like videos, weather widgets, or song lyrics. There are also several Amazon Alexa gadgets like the Echo Flex smart plug and Echo Wall Clock. As for implementing the Amazon Alexa, there are a list of strategies which are Sidebench researched that used 'Storyline' to make a user stream and inputs testing process with a computer microphone. In order to understand existing people's interactions with voice technology, industry and market sites are analyzed using internal user interviews and user testing and more. Developers can have experimentation on different inflection rules with Storyline as for example, the team could add "excitement" to a phrase. The Sidebench team built a story map and user journey from that implemented testing. Proceed to Slack integration phase as a third-party API integration, depending on its feasibility with the potential to integrate an e-commerce feature. In the next paragraph will be explained a bit on deep processing that involved in the making of Amazon Echo.

Trupti Behera has stated that, Alexa starts with signal processing, which provides as many opportunities as possible to understand audio by clearing the signal. The most important encounters are the signal processing which is one of in far-field audio. Bringing a tool to be able to identify ambient noise such as a TV and minimize it is an idea to improve the target signal. As for resolving these problems, roughly identification performed on the signal is coming from are conducted, so that the device could focus it with the use of seven microphones. Acoustic echo cancellation can reduce the signal so that only important signals will remain.

"Wake Word Detection" is the next task that determines if the user says one of the words programmed by the device to turn on, such as "Alexa". Without this, it can lead to inadvertent customer to purchase and became angry, so it is necessary to minimize false positives and negatives. This is really complicated, and needs to be done on devices, which have limited CPU power.

Conversion of the sound wave into text format will occur as the speech recognition software in the cloud receive the signal when the wake word is detected. As all the words are in the English language, the output space for sure huge as it appearances, and the cloud services are the only technology capable of scaling up adequately. As many artists use different spellings for their names than the words that existed in the vocabulary, the number of people who use the Echo for music also has led to further complicated.



**Figure 2: Alexa the Amazon Echo**

### III. Siri

Siri is designed to offer user an all-in-one way of interacting with their devices like iPhone, iPad, Apple Watch, iPod Touch, HomePod or Mac where user will speak to her and her speaking back to user to find or do what user need. Users can ask her questions, tell her to show the user something or issue her with commands for her to execute on their behalf, hands-free. The two main technologies of Siri are speech recognition and natural language processing (NLP). In order to provide Siri with an effective model of speech recognition, Apple uses huge, datasets which is then trained on varying datasets that are made up of voice samplings from lots of people. Siri allows to recognize all sorts of accents, inflections, and pace of speech. There could be a problem to Siri if user's phone is not connected to the internet as it does not and cannot process their speech on the phone or devices. Siri communicates with servers in the cloud to interpret user requests and retrieve the information they need.



**Figure 3: Siri HomePod**

#### IV. Cortana

Microsoft's personal productivity assistant known as Cortana helps user to focus attention on what matters most and save their time. By keeping user schedule up to date, managing Microsoft calendar, join a meeting in Microsoft Teams or next meeting is with who the users are the main purpose of Cortana is built for. It can create and manage lists while setting reminders and alarms, finding facts, definitions, and info, also open apps on user's computer. Cortana works with a cloud-based automatic translation service, the Microsoft translator speech API(Application Program Interface) for speech recognition process. Cortana speech recognition process using algorithms like Dynamic Time Warping that measures similarity between two time-based sequences which involve signal processing and speech recognition which may vary in speed during time series analysis. As it tries to find out whether the combination of words makes any sense or not then uses "command mode" the semantic interpretation take control on semantic property to decide how to respond to the user. The response may appear in two form either speech or text. What words to be used are decided here to maximize the user understanding. Conversion process is used and occurred if the response is to be given in the form of speech, then text to speech. Even Cortana has been widely used in many countries about 13 countries but, in Malaysia is not available yet.



**Figure 4: Cortana Microsoft**

## 2.2 PROJECT METHODOLOGY

### 2.2.1 System Development Life Cycle (SDLC) Methodology

#### Agile Methodology

As for completing this project, agile model approach has been used. Agile allow working product or project deliver quickly as each of iteration in each phase are eligible to be tested.

At planning phase, brainstorming the idea that can suite with current problem faced by people in organizing their life. Identify the user requirements and gathering all the requirement. Proceed on analyzing requirement and sperate user's needs and wants.

Design phase is where the system development will begin with the flow of the system. This include user that involved in project development and end-user.

Build phase is where system been implemented following the user and project requirements. Structure of the system program or code are using python library.

Proceed to testing phase, this should involve developer, system tester and end user. Produce a documentation user acceptance testing which count on expected result and actual result while testing the system.

Last but not least product review, review can achieve by feedback of system tester and end user. This is to show whether the project meet the user and project requirement or not. If both are acceptable, the product can be presented and launch, else proceed to the second sprint and third sprint. Planning stage may stay as planned or been changed due to user satisfaction of using or feedbacks for improvement phase.



**Figure 5: Agile Methodology Process**

## 2.3 PROJECT REQUIREMENT

### 2.3.1 System requirement

**Table 2.3-1 Software Requirement**

Requirement	Minimum	Recommended
RAM	4 GB of free RAM	8 GB of total system RAM
CPU	Any modern CPU	Multi-core CPU. PyCharm supports multithreading for different operations and processes making it faster the more CPU cores it can use.
DISK SPACE	2.5 GB and another 1 GB for caches	SSD drive with at least 5 GB of free space
MONITOR RESOLUTION	1024x768	1920×1080
OPERATING SYSTEM	Officially released 64-bit versions of the following: Microsoft Windows 8 or later macOS 10.13 or later. Any Linux distribution that supports Gnome, KDE, or Unity DE. PyCharm is not available for some Linux distributions, such as RHEL6 or CentOS6, that do not include GLIBC 2.14 or later.	Latest 64-bit version of Windows, macOS, or Linux (for example, Debian, Ubuntu, or RHEL)

#### Evaluation:

As for the developing the Nia the smart assistant system, PyCharm Community Edition 2020.3.3 is chosen to be used to create the system running code program. The minimum requirement for PyCharm Community Edition 2020.3.3 for the processor any modern CPU while the recommended PC specification should use the Multi-core CPU for the processor as PyCharm supports multithreading for different operations and processes making it faster the more CPU cores it can use. RAM minimum requirement needed is 4 GB of free RAM and 8 GB of total system RAM recommended if the software running on a virtual machine. The minimum storage needed for the PyCharm Community Edition 2020.3.3 is 2.5 GB and another 1 GB for caches while the recommended requirement is SSD drive with at least 5 GB of free space for PyCharm Community Edition 2020.3.3 to be installed. The operating system minimum requirement for PyCharm Community Edition 2020.3.3 is must at least Officially released 64-bit versions of the following Microsoft Windows 8 or later macOS 10.13 or later, any Linux distribution that supports Gnome, KDE, or Unity DE. PyCharm is not available for some Linux distributions, such as RHEL6 or CentOS6, that do not include GLIBC 2.14 or later. Lastly is the minimum requirement of video card running at 1024 x 768 or higher display resolution and recommended requirement is 1920×1080 display resolution in order to run PyCharm Community Edition 2020.3.3.

As for the conclusion, all the PC specifications are compatible with the listed minimum requirement of PyCharm Community Edition 2020.3.3 because all the PC specification have higher specification than the PyCharm Community needed to be installed. Hence, the PC specifications have met the minimum requirements of PyCharm Community Edition 2020.3.3 can be proceed with the development phase. Therefore, the system can be developed on that PC.

### 2.3.2 Hardware requirement

Requirement	PC specification Hardware Requirement (ASUS TUF GAMING A15)
Processor	Processor AMD Ryzen 7 4800H with Radeon Graphics, 2900 Mhz, 8 Core(s), 16 Logical Processor(s)
RAM	16 GB
Storage (SSD)	512GB PCIe® Gen3 SSD
Operating System	OS Name Microsoft Windows 10 Home Single Language
Graphic or Video card	NVIDIA GeForce GTX 1650Ti 4GB GDDR6 VRAM

### 2.3.3 Specifications for Environment

#### (a) Functional Requirements

- Speak able
- Set Reminders and Alarm
- Search information
- Auto-play system

#### (b) Non-Functional Requirements

##### Maintainability requirements

Changeability:

No error shall need more than one person-days to identify and fix.

##### Reliability requirements

Recoverability:

In case of an error, the time needed to get the system up and running again shall not exceed one hour (MTTR).



## 2.4 PROJECT GANTT CHART PSM 1 & PSM 2

## PSM 1 GANTT CHART

[illegible]



### PSM 2 GANTT CHART

Task Name	Month							
	July		August				September	
	W1	W2	W3	W4	W5	W6	W7	W8
<b>Chapter 5: Implementation</b>								
Code Program Development								
Reorganize program code								
Full system development								
<b>Chapter 6: Testing</b>								
Produce test cases								
Conduct testing								
Produce system manual								
<b>Chapter 4: Project Conclusion</b>								
System Installation								
Deployment								
Project Demo								
Project Presentation								
Project Report Maintenance								



## **CHAPTER 3: ANALYSIS**

In this chapter, analysis on project development will be conducted. This includes what problem occur during project development, how the system should work, the libraries that used to apply in the program to make it work and worth.

### **3.1 PROBLEM ANALYSIS**

In developing this project, the main important is signal process. This relates to sound waves which happen from analog to digital and digital to analog. With built in microphone and speaker these should be no problem to do the conversion. But what the problem is speech recognition. In this world, there are many kinds of speech and accent. How can we make sure the system can understand user's speech? Developer use the ready-made vocabulary by Google as it has big dataset of vocabulary around the world. Developing this project basely using English language as it has simple term. The second problem is to make sure the voice command detection detects the correct and same as what user said it out and wants. The recognition of the speech by user sometime turns out to another terms, as the signal processing is not right due to background noise. Therefore, both of the problem could just be on the right track with correct and clear pronunciation by the user.

### 3.2 WORK OF NIA (Nice In Assist)

- i. **Signal processing:** It is the technology present in all stages of sound processing, from the conversion from analog to digital, to the application of filters or the gain control. Regarding Nia, it enables extracting the information within signals to translate it recognizable words.
- ii. **Speech recognition:** This is the most important part of this process, here the actual recognition is done. The feature vectors sequence is then decoded into a sequence of words. This is done by using algorithms such as python library speech recognition. The program includes big dictionary of popular words that exist in language using Google Vocabulary. Each feature vector should be matched against the sound.
- iii. **Semantic interpretation:** The algorithm will check to see if a given syllable can appear after another in the language. After that there will be grammar check which more to English vocab. The combination of words either it makes any sense or not also will be triggered. The way to decide how it can respond to the user is by using “command mode” semantic property.
- iv. **Dialogue management:** Mistakes are attempted to be corrected. The meaning of the combined words is then extracted, and the task at hand is completed. It is a framework that allows Nia talents to be authenticated. The conversation management produces a list of instructions for other sections of the conversation system, which is normally in the form of a semantic interpretation.
- v. **Response generation:** Following the completion of a task, the response or outcome of the task is generated. The response can take the shape of a speech or a text message. It is chosen here the words to employ in order to optimize the user's understanding. The text to speech conversion method is employed if the response is to be supplied in the form of speech. In many cases Nia voice is not digitized at all. It is really Zira Voice or whoever else owns Nia voice in each country. In case, there is little no time for an answer to be recorded Nia can have her own response be readout by using her digitally generated Zira voice font.

### 3.3 PYTHON LIBRARY

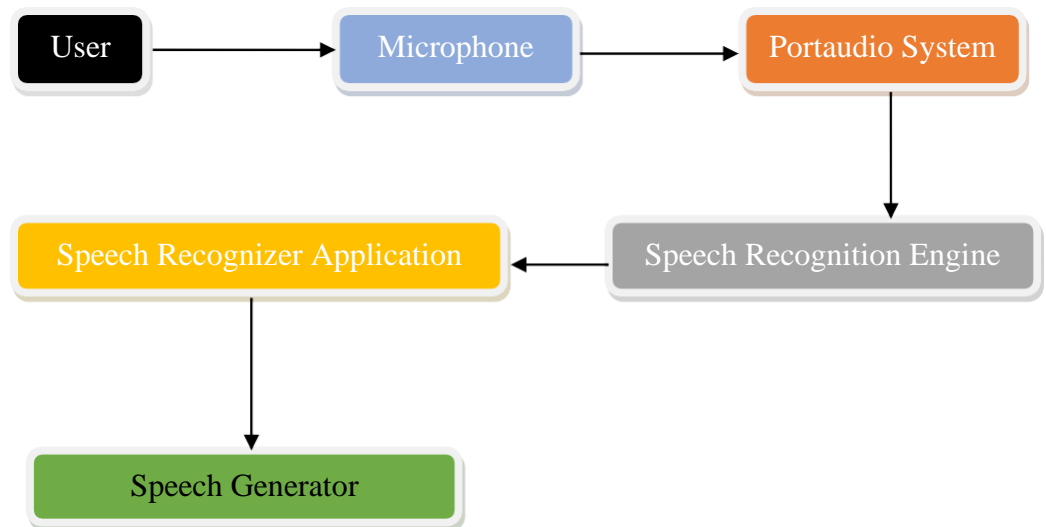
Table 3.2 shows all the python libraries used for developing the smart assistant system.

**Table 3.3-1: python libraries**

Libraries	Description
SpeechRecognition	Speech recognition library use for recognizing speech or voice from user through microphone which include support for several engines and APIs, online and offline. As for this project system development will use engine/support from Google Speech Recognition.
pyAudio	Required if and only if you want to use microphone input (Microphone). PyAudio version 0.2.11+ is required, as earlier versions have known memory management bugs when recording from microphones in certain situations.
pyttsx3	A text-to-speech conversion library in Python. Unlike alternative libraries, it works offline, and is compatible with both Python 2 and 3.
PyWhatKit	Python inbuilt numerous libraries to ease developer work. Among them PyWhatKit is a Python library for sending WhatsApp messages at a certain time, it has several other features too. Following are some features of PyWhatKit module: <ul style="list-style-type: none"> <li>• Send WhatsApp messages.</li> <li>• Play a YouTube video.</li> <li>• Perform a Google Search.</li> <li>• Get information on particular topic</li> </ul>
pyScheduler	A task scheduler is a controller that executes tasks in a given order. In this case tasks are executed so that all tasks are executed before any of its dependencies.
pyjokes	This library is one-line jokes for programmers where jokes be as a service. It will return random jokes to user.
datetime	Allow system to show current date or time required by user either in 24 hours format or 12hours format.
subprocess	Enable user to open another common application in the device.

## CHAPTER 4: DESIGN

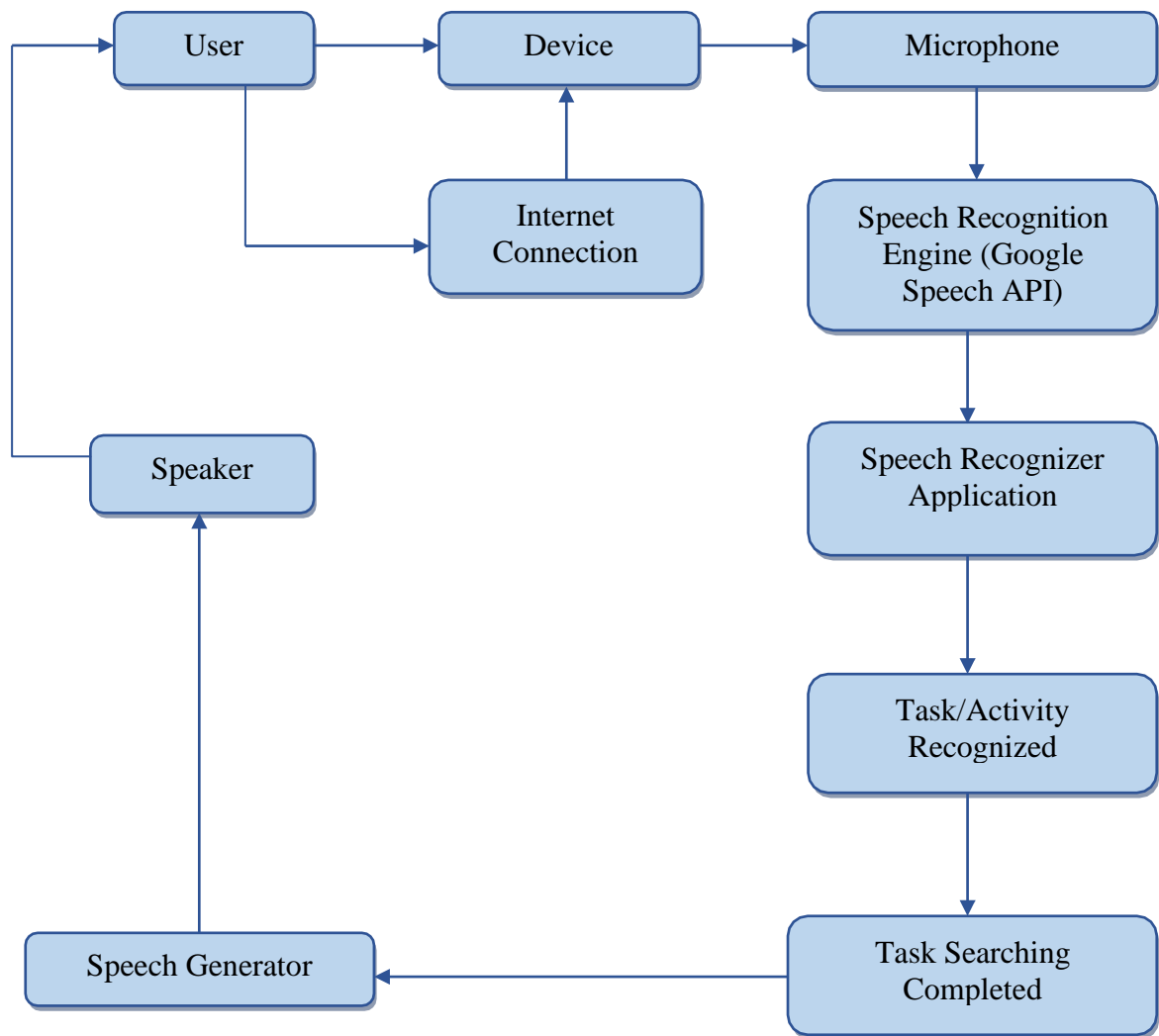
### 4.1 Flow Process of Nia



- i. **User:** User speak into the microphone. Example: “Play me some horror movie”
- ii. **Microphone:** Capture sound waves and convert it to generate electrical impulse.
- iii. **Portaudio System:** The cross-platform audio I/O library that allows playing or recording the audio received by user.
- iv. **Speech Recognition Engine:** By using Google Speech Recognition, it will recognize speech input from the microphone. This is where the digital sound signal converted to phonemes.
- v. **Speech Recognizer Application:** Application process the recognized words as text input and display it.
- vi. **Speech Generator:** Text input displayed will be converted to speech. This is where the system will do interactive AI by replying to the user while opening YouTube platform to display horror movie.



## 4.2 System Architecture



### **4.3 Features of Nia**

#### **1. Reminders**

The ability to set reminders is the main idea development of Nia, that also include the time based, people based & event location based. It also eligible for setting the alarms and voice over the current time. This includes for adding some notes for future reference.

#### **2. Improved Search**

The Internet may be a ocean of information, but that is not the only resource available to Nia. Nia also able to play desire movies or music's videos just by asking her to play it and it will auto-play.

#### **3. Playing Jokes:**

Nia able to tell some jokes when the user need accompany. It will speak up the random jokes that might cheer up the user.

#### **4. Offline function**

Nia able to be used while offline or no data. This could help user even they not online or data has been used out, as Nia could still remind the task or activities scheduled.

#### **5. Open apps on computer device**

Nia could be used for opening any other apps or software like notepad, Microsoft office software, file folder and more. This functionality may save user's time as they are doing another thing, just voice over to open the desire apps, Nia will try to help by opening it.

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# Appendix

```

main.py x
1  import speech_recognition as sr
2      import pyttsx3
3      import pywhatkit
4      import datetime # for fetching date and time
5      import subprocess
6      import webbrowser as web
7      import os
8
9      listener = sr.Recognizer() # to recognize the user command
10     engineNia = pyttsx3.init() # initialize engine for conversion
11     voices = engineNia.getProperty('voices')
12     engineNia.setProperty('rate', 180) # control cakap speed
13     engineNia.setProperty('voice', voices[0].id) # change index to change voices Zira[0] David[1]
14     engineNia.say('Hi, Nia here. need anything? ') # intro after run
15
16     # WAKE WORD
17     WAKE = "Nia"
18
19     # Used to store user commands for analysis
20     CONVERSATION_LOG = "Command_testlist.txt"
21
22
23     def cakap(text):
24         engineNia.say(text)
25         engineNia.runAndWait()
26
27

```

```

main.py x
28     def note(text):
29         date = datetime.datetime.now()
30         file_name = str(date).replace(":", "-") + "-note.txt"
31         with open(file_name, "w") as f: # w stand for create or write non exist file
32             f.write(text)
33         subprocess.Popen(["notepad.exe", file_name])
34
35
36     class Nia:
37         def __init__(self):
38             self.listener = sr.Recognizer()
39             self.microphone = sr.Microphone()
40
41         def take_command(self, listener):
42             try:
43                 with sr.Microphone() as source:
44                     cakap('Listening...')
45                     listener.adjust_for_ambient_noise(source)
46                     listener.dynamic_energy_threshold = 3000
47                     '''May reduce the time out later in future'''
48                     voice = listener.listen(source, timeout=10.0)
49                     mycommands = listener.recognize_google(voice)
50                     n.remember(mycommands)
51                     if 'nia' in mycommands:
52                         command = mycommands.replace('nia', '')
53                         print(command)
54                         return mycommands.lower()
55
56             except sr.WaitTimeoutError:
57                 pass
58             except sr.UnknownValueError:
59                 cakap('I cannot get that sorry')

```

```

main.py x
60         except sr.RequestError:
61             cakap('Network Error. Sorry. Try later. ')
62
63         # Used to open the browser or specific folders
64
65     def run_nia(self, mycommand):
66
67         print(mycommand)
68
69         if 'time' in mycommand:
70             time = datetime.datetime.now().strftime('%I:%M %p')
71             print(time)
72             cakap('Sekarang' + time)
73         if 'date' in mycommand:
74             date = datetime.datetime.now().strftime('%A %x')
75             cakap('hari ini' + date)
76
77         elif 'play' in mycommand:
78             any = mycommand.replace('play', '')
79             cakap('playing' + any)
80             pywhatkit.playonyt(any)
81
82         elif 'show' in mycommand:
83             any = mycommand.replace('show', '')
84             cakap('showing' + any)
85             pywhatkit.playonyt(any)
86
87         elif 'suggest' in mycommand:
88             any = mycommand.replace('suggest', '')
89             cakap('suggesting' + any)
90             pywhatkit.playonyt(any)
91

```

```

main.py x
92         elif 'remember this' in mycommand:
93             cakap("what do you want to take a note?")
94             notethat = n.take_command(listener)
95             note(text=notethat)
96             cakap("I've made a note of that")
97
98         elif 'open youtube' in mycommand:
99             cakap("Opening Youtube.")
100             web.open("https://www.youtube.com/")
101
102         # Will need to expand on "open" commandsGG
103         elif 'open facebook' in mycommand:
104             cakap("Opening Facebook.")
105             web.open("https://www.facebook.com")
106             pass
107
108         elif 'open my documents' in mycommand:
109             cakap("Opening My Documents.")
110             os.startfile("C:/Users/user/Documents")
111             pass
112
113         elif 'open my downloads folder' in mycommand:
114             cakap("Opening your downloads folder.")
115             os.startfile("C:/Users/user/Downloads")
116             pass
117
118         elif 'nope' in mycommand:
119             cakap("OK See ya later!")
120             n.exit(Nia)
121

```



```
main.py x
119         cakup("OK See ya later!")
120         n.exit(Nia)
121
122     else:
123         cakup("is there anything more you want")
124         pass
125
126     # Used to track the date of the conversation, may need to add the time in the future
127
128     def start_conversation_log(self):
129         today = str(datetime.datetime.now())
130         today = today
131         with open(CONVERSATION_LOG, "a") as f:
132             f.write("Conversation started on: " + today + "\n")
133
134     # Writes each command from the user to the conversation log
135
136     def remember(self, command1):
137         with open(CONVERSATION_LOG, "a") as f:
138             f.write("User: " + command1 + "\n")
139
140
141     n = Nia()
142     n.start_conversation_log()
143     while True:
144         command = n.take_command(listener)
145         n.run_nia(command)
146
```