

Assignment 1	Project Summary
Course	Intelligent Agents with Generative AI - 2024
GitHub Repository	https://github.com/forybogdanov/iron-man-helmet

Project author		
№	Name	Faculty Number
1	Nikifor Bogdanov	5mi0800464
	...	

Project name	Intelligent Personal Assistant partially Embedded into Wearable Helmet
--------------	--

1. Short project description (Business needs and system features)

Multi-agent system with speech-to-speech capabilities while impersonating a Robot assistant with the following functionalities:

- General question-answering
- Chatting
- Notetaker and reader (audio and text)
- (Optional) Action calling - reading data from a sensor, activating motors, taking picture
- (Optional) Image capabilities - taking and analyzing a photo

2. ML/Agent System Description using PEAS

[\[https://aima.cs.berkeley.edu/4th-ed/pdfs/newchap02.pdf\]](https://aima.cs.berkeley.edu/4th-ed/pdfs/newchap02.pdf)

Agent name	Performance Measure	Environment	Actuators/Outputs	Sensors/Inputs
2.1. Voice and Text agent	Optimal transformation of audio to text input and vice versa	A multimedia-enabled microcontroller (ESP32 WROOM 32-D) with microphone and speaker as well as more powerful computational machine(laptop)	Play responses from other agents as audio on the microcontroller with the small speaker	Receive user audio commands through microphone

		or a server environment		
2.2 Question-Answering and Chatting Agent	Accurate real-time answers	Server environment	Text output to be sent to the Voice agent	Text input from the Voice and Text agent as well as getting relevant info from notes
2.3 Image analyzing Agent (Optional)	Accurate description of an image	Server environment	Text description of the photo	Image gotten from the microcontroller camera

3. Main Use Cases / Scenarios

Use case name	Brief Descriptions	Actors Involved
3.1. Answer a question/Chatting	The user can ask or chat with the Question-Answering and Chatting Agent	User
3.2. Note taking	The user can make notes that later to be accessed	User
3.3. Image Analysis	Analyze image taken from the helmet's camera	User

4. API Resources (REST/SSE/WebSocket Backend)

View name	Brief Descriptions	URI
1.1. Notes	GET, POST, PUT(optional), DELETE notes	<i>/api/notes</i>
1.2. Voice	POST question or just text input to chat with the model	<i>/api/voice</i>
1.3. Action	POST determines what action is asked for and calls it	<i>/api/action</i>
1.4. Image	POST image to be analyzed	<i>/api/image</i>