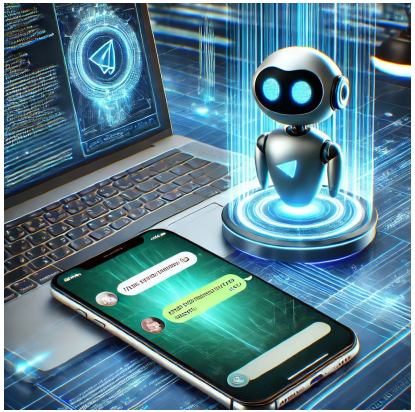
Data Science Survival Skills

Homework 9

Description of the Homework

In this homework assignment, your task is to program your own AI assistant that you can access via your smartphone. You will set up a Telegram bot that will serve as a communication channel to interact with a server (e.g. your laptop or PC). The server will execute the inference of an LLM (e.g. the TinyLlama model) to process and respond to your input message.



Homework 9: Tasks 1/2

- Use the BotFather on Telegram to create your bot. Follow the on-screen instructions to set it up
- Once created, you will receive an API token. Keep this token secure, as it is required to connect to your bot
- There are numerous tutorials available online to guide you through the setup process. If you encounter specific issues or have questions, feel free to use the StudOn forum for support
- Send a simple message, such as "Hello World" or "Hello AI Assistant," from your Telegram app to your bot
- Ensure your bot processes the message and relays it to your PC or laptop as intended

➔ **Slide: Screenshot of the implemented methods responsible for handling the sending and receiving of messages to and from your Telegram bot**

Homework 9: Task 2/2

- Select a Large Language Model (LLM) to power your AI assistant's backend
- You may use TinyLlama (model link) or any other model of your choice that fits your hardware capabilities
- Configure your backend to receive messages sent via your chatbot
- Feed the message input (e.g., text sent via Telegram) to the LLM running locally on your Laptop/PC for inference
- Note: Inference might take time if you are using a CPU. For better performance, use GPU acceleration if available
- Interact with your AI assistant by asking it to **share facts about your favorite animal**

➜ **Slide: Screenshots of your code where we can see your implementation of the usage of your LLM**

➜ **Slide: Screenshot of the chat where you sent the animal message to your AI assistant and the received output**

➜ **Slide: Link to your code on GitHub (make sure you make it publicly available)**

➜ **Slide: Telegram bot address (t.me/<your_bot_name>)**

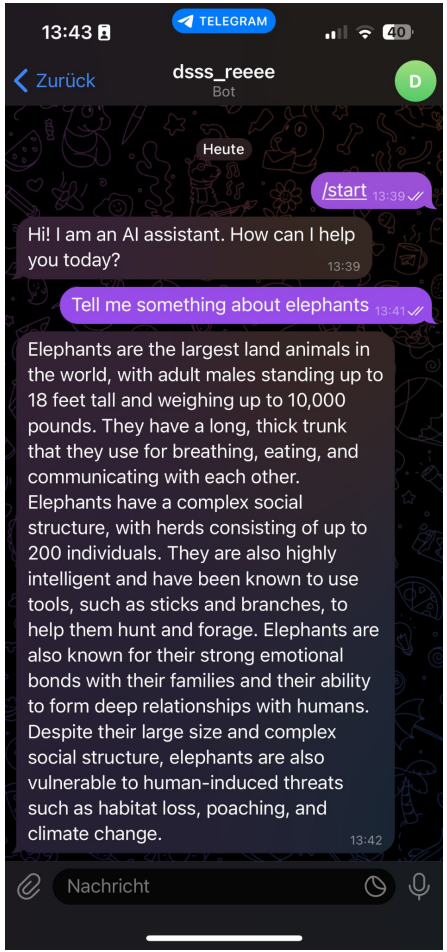
Example solution

```python
async def start(update: Update, context: CallbackContext) -> None:
    """Send a message when the command /start is issued."""
    # TODO

async def process(update: Update, context: CallbackContext) -> None:
    """Process the user message."""
    # TODO

def main() -> None:
    """Start the bot."""
    API_TOKEN = "YOUR_TOKEN"
    application = Application.builder().token(API_TOKEN).build()

    # TODO

if __name__ == '__main__':
    main()
```

```python
from transformers import pipeline
pipe = pipeline("""TODO""")
```

https://github.com/<your_repository_name>.git

t.me/<your_bot_name>



Homework: Requirements

You must complete **all** homework assignments (**unless otherwise specified**) following these guidelines:

- **One** slide/page.
- **PDF** file format only.
- It has to contain your **name, student** (**matriculation**) **number** and **IdM** in the down-left corner.
- Font: **Arial,** Font-size: **> 10 Pt.**
- Answer **all** the questions and solve all the tasks requested.
- Be careful with **plagiarism**. Repeated solutions will not be accepted!