Internship Report

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Internship Role: AI Developer Intern

Company: ProgrammX

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Acknowledgement

I would like to express my heartfelt gratitude to ProgrammX for giving me the opportunity to work as an AI Developer Intern. I am especially thankful to **Team Lead Sir Wajahat** for his guidance and support throughout the internship. I had the privilege of working with **Mam Maryam** and their mentorship and encouragement helped me strengthen my skills while gaining valuable practical experience in handling real-world tasks.

Introduction

The purpose of this report is to summarize my experience during the AI Developer Internship at ProgrammX. Over the course of this internship, I worked on practical, AI-driven projects involving chatbots, APIs, and automation tools. I gained exposure to machine learning workflows, natural language processing, and system integration while developing scalable AI-based applications.

Internship Objectives

- Gain hands-on experience in AI and chatbot development.
- Learn about integrating APIs with external systems.
- Develop end-to-end Python-based automation and AI tools.
- Enhance skills in NLP, data parsing, and backend logic.
- Strengthen development workflows using version control and agile tools.

Projects and Responsibilities

1. **Telegram Bot**

   Description:

   Developed a Telegram Bot using Python that answers user queries on diverse topics such as programming, mathematics, science, and general knowledge. The bot interacts via the Telegram Bot API, processes user input, and provides contextual responses. It supports commands like /start, /help, and /custom, along with free-text queries.

   Tools and Technology:

   - **Programming Language:** Python
   - **Library:** python-telegram-bot
   - D**evelopment Tool:** VS Code
   - **Execution:** Runs via Python script in terminal

2. **Rasa–ClickUp Task Management Chatbot**

   Description:

   Designed a chatbot that allows clients to submit task or change requests directly through a conversational interface. The chatbot validates inputs, gathers structured information, and automatically creates corresponding tasks in ClickUp through API integration — streamlining project communication and task tracking.

   Tools and Technology:

   - **Programming Language:** Python
   - **Chatbot Framework:** Rasa
   - **Data Validation:** Pydantic
   - **Development Tool:** VS Code
   - **UI:** HTML, CSS, JS
   - **Execution:** Web-based chatbot interface

3. IKIOO Transcription Application

Description:

Developed an AI-powered medical transcription app that converts doctor–patient audio conversations into structured, accurate medical summaries. The system identifies speaker roles, extracts diagnoses, medications, and follow-up instructions, and generates a formatted PDF summary for medical recordkeeping.

Tools and Technology:

- **Programming Language:** Python
- **API Framework:** FastAPI
- **Speech-to-Text:** Whisper
- **Speaker Diarization:** Pyannote.audio
- **Medical Summary (LLM):** BioMedLM
- **PDF Generation:** fpdf2
- **Development Tool:** VS Code
- **Execution:** Runs with GPU acceleration via Anaconda Prompt

4. Vimeo Video Stream Link Generator

Description:

Created a tool that uses cookies and the yt-dlp library to fetch video and audio streams from Vimeo. The tool merges both streams into a single HLS video link, compatible with media players such as VLC and HLS-based players.

Tools and Technology:

- **Programming Language:** Python
- **Library:** yt-dlp
- **Tools:** Cookie extractor, VLC / HLS Player

5. Tidal API Testing

Description:

Tested multiple Tidal API endpoints using curl and Python scripts. Verified responses for GET, POST, PATCH, and DELETE methods and stored their JSON outputs for documentation and analysis.

Skills Developed

Technical Skills:

- ❖ Python programming (FastAPI, Rasa, automation)
- ❖ Chatbot and NLP development
- ❖ API integration and data parsing
- ❖ Speech-to-text processing and LLM-based summaries
- ❖ Web automation and multimedia data handling
- ❖ Version control (Git, GitHub)

Soft Skills:

- ❖ Problem-solving and analytical thinking
- ❖ Collaboration in a technical team environment
- ❖ Project management and documentation
- ❖ Efficient time management and multitasking

Challenges and Solutions

- **Challenge:** Integrating multiple APIs and ensuring consistent data validation
  Solution:
  - → Utilized Pydantic to define structured schemas for API inputs and outputs.
  - → Enabled automatic validation and error handling for incoming and outgoing data.
  - → Ensured the system could handle unexpected data formats or missing fields reliably.

- **Challenge:** Managing large audio files and achieving accurate transcription
  Solution:
  - → Optimized usage of the Whisper model to efficiently process large audio files.
  - → Leveraged GPU acceleration to improve processing speed and transcription accuracy.
  - → Implemented strategies to reduce memory usage and handle high-volume audio data effectively.

- **Challenge:** Handling Telegram Bot user overload during testing
  Solution:
  - → Implemented command handling to properly manage different user requests.

Conclusion

My internship as an AI Developer at ProgrammX has been a transformative learning experience. I developed multiple AI-powered applications, gained hands-on experience with APIs and NLP systems, and learned how to build scalable automation tools. The skills, tools, and teamwork experience I gained will serve as a strong foundation for my career in AI and software development.