Internship Report

at V Group Inc.
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Role: AI/ML & Analytics Intern (Jun 2025 – August 2025)

Acknowledgement

I would like to express my sincere gratitude to **V Group Inc.** for providing me with this internship opportunity. I am especially thankful to my mentors and colleagues for their constant support and guidance during my internship. Their insights helped me develop not only my technical expertise but also my understanding of professional workflows.

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1. Introduction

Internships are a crucial bridge between academic learning and industry practice. This report presents my **three-month internship experience at V Group Inc.**, where I worked as an **AI/ML & Analytics Intern**.

My role involved contributing to the **Context to Call platform**—a flagship V Group Inc. product designed for communication and customer engagement. While the platform itself focuses on seamless VoIP and web-based calling solutions, I was tasked with building **prototypical AI/ML features** that could enhance its value. These included detecting **AI-generated calls**, extracting **context and sentiment** from conversations, **evaluating chatbot platforms**, and **building an FAQ chatbot using LangChain**.

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2. Company Profile

Founded in **1999**, **V Group Inc.** is a **New Jersey–based IT software solutions company** specializing in **digital transformation, analytics, AI solutions, and customer experience management**.

The company provides a wide spectrum of services including:

- **Software Development & IT Consulting**

- **Analytics & Artificial Intelligence**
- **Enterprise Mobility & Digital Solutions**
- **Financial Services Technology**
- **Product Development** (e.g., *Context to Call*)

V Group Inc. operates across the U.S. and India, with development centers in **Bhopal** and other locations. The organization is committed to **client-centric innovation**, ensuring businesses remain future-ready through emerging technologies.

Context to Call, one of its flagship products, allows businesses to **embed "Click-to-Call" and SMS features** directly into their websites. It supports **global reach (200+ countries), low-latency VoIP calling, analytics dashboards, and cost-efficient communication**. My work focused on **envisioning AI/ML features** that could be layered on top of this product.

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3. Objectives of the Internship

The specific objectives of my internship were:

- To **apply AI/ML skills** in real-world scenarios involving voice and conversational data.
- To design **prototypes** for potential features of Context to Call.
- To research existing **chatbot solutions** and develop a working proof-of-concept chatbot.
- To strengthen my expertise in **transformers, NLP, and LangChain frameworks**.
- To gain exposure to professional **Agile workflows, collaboration tools, and reporting**.

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4. Methodology and Work Approach

My internship followed a structured **Agile methodology**, with work divided into weekly sprints.

Approach:

1. **Requirement Analysis** – Understanding the project scope and defining deliverables.
2. **Research Phase** – Reviewing existing models, APIs, and chatbot providers.
3. **Prototype Development** – Building working models for fake-call detection, context extraction, and chatbot functionality.
4. **Testing & Evaluation** – Running experiments, collecting accuracy metrics, and refining models.
5. **Documentation & Reporting** – Preparing technical notes and presenting findings to my mentors.

Tools and technologies used:

- **Python, scikit-learn, TensorFlow/Keras, HuggingFace Transformers**
- **LangChain framework** for chatbot building
- **Google Speech-to-Text API** for transcription
- **Pandas, Matplotlib, Seaborn** for analytics and visualization
- **Git, Jira** for version control and project tracking

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5. Detailed Tasks Assigned

5.1 Fake AI-Generated Call Detection

- Built a machine learning model to distinguish between **synthetic AI-generated voices** and **human speech**.
- Used features like **MFCCs (Mel Frequency Cepstral Coefficients)** and **spectrogram analysis**.
- Trained classification models and tested accuracy on **noisy real-world samples**.

5.2 Context and Sentiment Extraction

- Implemented NLP techniques to analyze **transcribed phone calls**.

- Used **transformer models (T5)** to extract **conversation context**.
- Applied **VADER and fine-tuned sentiment models** to classify calls as positive, neutral, or negative.

5.3 Chatbot Platform Research

- Researched providers including **Google Dialogflow, Microsoft Bot Framework, Amazon Lex, and Rasa**.
- Documented **features, strengths, and integration capabilities** of each.
- Provided a comparative analysis report for V Group Inc.'s internal consideration.

5.4 FAQ Chatbot Development with LangChain

- Designed and built a **FAQ-style chatbot** using LangChain.
- Implemented **retrieval-augmented generation (RAG)** with vector embeddings for contextual answers.
- Integrated knowledge base updates to allow scalability.

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6. Challenges Faced

- **Data Quality Issues**: Conversational audio often contained noise, pauses, and overlapping speech.
- **Model Generalization**: Ensuring fake-call detection worked across different accents and speech speeds.
- **Short Timeline**: Adapting quickly to transformers and LangChain within three months.
- **Integration Complexity**: Designing prototypes that could potentially scale into Context to Call.

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7. Personal Learnings

7.1 Technical Learning

- Entered the internship strong in **AI/ML and deep learning** fundamentals.
- Gained practical experience with **transformers (e.g., T5)** for NLP tasks.
- Learned **LangChain** for building modular, production-ready chatbots.
- Improved skills in **data analysis, visualization, and API integrations**.

7.2 Professional Development

- Exposure to **Agile methodology (sprint planning, daily standups)**.
- Improved ability to **document findings, create reports, and present solutions**.
- Strengthened communication and teamwork while working across departments.

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8. Conclusion

My internship at **V Group Inc.** was a rewarding journey that combined **research, prototyping, and real-world application of AI/ML**. Although the features I developed—such as **fake call detection, context/sentiment extraction, and chatbot prototypes—remain at the prototype stage**, they represent potential value additions to the Context to Call platform.

This internship not only enhanced my **technical expertise in transformers and LangChain** but also taught me how to approach AI/ML problems in a **practical, business-driven context**. The experience has been an important stepping stone toward my professional career in **AI and Analytics**.