

Internship Report

Name: Ahmed Adam

Project Title: AI-Driven Automation for QS Report Generation

Internship Period: 07/07/25 to 31/07/25

Organization: BPM Contech Solutions

In collaboration with: Education New Zealand

Mentors/Supervisors: Anna Treffer (*University of Canterbury*)

1. Introduction

As part of my internship under the collaborative program facilitated by Education New Zealand, I had the privilege to work on a forward-looking project focused on automating Quantity Surveying (QS) report generation. The internship involved researching, designing, and prototyping an AI-driven system to address the inefficiencies of manual QS reporting—a process that is traditionally time-intensive and prone to errors.

The experience offered not just technical challenges, but also opportunities to learn from New Zealand's bicultural ethos, especially drawing from Māori values, which deeply enriched my personal and professional growth.

2. Nature of Work Undertaken

My work revolved around building an end-to-end automation pipeline that could intelligently process QS documents, extract relevant data, and generate well-structured reports. Key contributions included:

a. Understanding the Problem

- Explored the operational bottlenecks in manually generating QS reports from contractor quotes.
- Identified the need for a scalable, efficient, and accurate solution.

b. Prototype Design & Development

- Built an MVP (Minimum Viable Product) using open-source Python tools and Streamlit.
- Enabled input from multiple file formats (PDF, DOCX, XLSX).

c. Two-pronged Data Extraction

- Approach 1: Traditional parsing using libraries like pdfplumber, python-docx, and pandas.
- Approach 2: AI-driven extraction using LangChain and GPT-3.5-turbo to interpret complex financial and project data.

d. Prompt Engineering & Validation

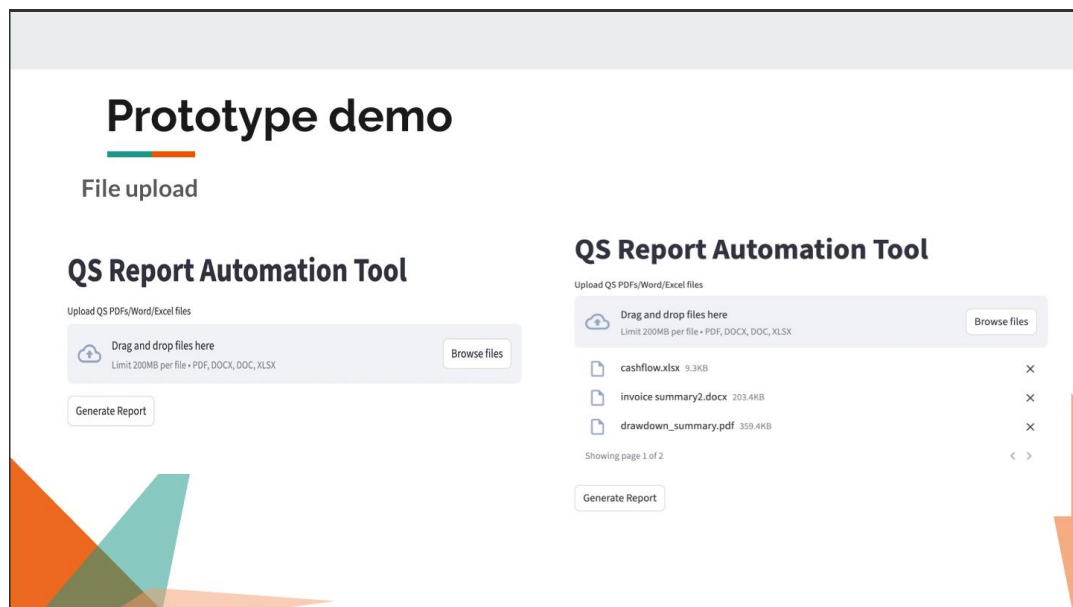
- Designed structured prompts to accurately extract ~27 key fields, such as equity, loan amounts, site data, etc.
- Incorporated feedback loops and regex validation to improve reliability.

e. Report Generation

- Created a structured dictionary (extracted_data.json) from the parsed data.
- Used docxtpl to generate Word reports with professional formatting and layout consistency.

f. Performance Assessment

- Achieved a reduction in report processing time from 5 hours to under 15 minutes.
- Estimated cost savings of up to \$750 NZD per report, assuming typical consultancy rates.



Prototype demo

A) Costs to Complete Development			A) Costs to Complete Development		
The total loan amount (excluding any interest and fees) is {{total_budget}}.			The total loan amount (excluding any interest and fees) is \$42,85,471.00.		
Total Budgeted Development Costs	{{total_budget}}		Total Budgeted Development Costs		\$42,85,471.00
Less: Certified up to and including this Certificate	{{loan_drawn_to_date}}		Less: Certified up to and including this Certificate		\$32,36,423.35
Estimated Costs remaining to complete development.	{{loan_remaining}}		Estimated Costs remaining to complete development.		\$10,49,047.65
Initial Advance Facility	{{initial_advance}}		Initial Advance Facility		\$11,35,521.00
{{company_name}} Loan Facility	{{loan_facility}}		Squirrel P2P Trustee Limited Loan Facility		\$21,21,000.00
Plus Equity	{{equity}}		Plus Equity		\$10,28,950.00
Less: Loan drawdown up to and including this certificate	{{loan_drawn_to_date}}		Less: Loan drawdown up to and including this certificate		\$32,36,423.35
Loan available to complete the development	{{loan_remaining}}		Loan available to complete the development		\$10,49,047.65
The estimate costs to complete are within the loan facility available to complete the development.			The estimate costs to complete are within the loan facility available to complete the development.		

Template

Generated version

3. Tools & Technologies Used

- Python: pdfplumber, pandas, python-docx, regex
- LangChain
- OpenAI GPT-3.5-turbo
- Streamlit
- docxtpl
- NLP & Prompt Engineering

4. Learnings & Takeaways

This internship offered a well-rounded experience, with learning that extended beyond technology:

a. Technical Growth

- Deepened my understanding of NLP, AI agents, and real-world automation pipelines.
- Learned to develop hybrid systems balancing data privacy (local parsing) and scalability (AI agents).
- Enhanced my skills in prompt engineering, validation logic, and template-driven report generation.

b. Cross-Cultural Enrichment: Māori Teachings

In working with a New Zealand-based initiative, I was introduced to Māori values which greatly shaped my approach to teamwork, innovation, and purpose-driven work:

- Whanaungatanga (relationships): Emphasized the importance of collaboration, not just within the team but with stakeholders and end users. It taught me to see coding not just as logic, but as connection—between people, data, and outcomes.
- Manaakitanga (care and respect): Fostered a mindset of responsibility—ensuring the tools we build respect data integrity, privacy, and end-user trust. This was especially crucial in choosing between cloud-based and locally hosted solutions.

c. Professional Readiness

- Improved my project planning, demo preparation, and technical documentation skills.
- Gained confidence in working with real-world stakeholders and iterating based on user needs.

5. Conclusion

The internship—bridging cutting-edge AI tools and culturally-rooted practices—has been transformative. It not only refined my technical expertise but also helped me grow as a globally aware and ethically grounded developer. The prototype we developed stands as a testament to what's possible when innovation is driven by both efficiency and empathy.

I am grateful to Education New Zealand, BPM Contech, Anna Treffer and my project team for enabling such a meaningful learning journey.

Certificate:



Certificate of Internship

This certificate is awarded to

**Ahmed Adam
NMIMS**

for successful completion of “**Education New Zealand Virtual Internship**”,
a three-week Virtual Internships programme hosted by
Education New Zealand Manapou ki te Ao in July 2025.

Jugnu Roy
Director of Engagement – East Asia & India
Education New Zealand Manapou ki te Ao

