Assessment 1: Industry and Society Understanding and Analysis

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1. Introduction

Natural language processing (NLP) is a branch of AI and ML that focuses on the task of training machines to comprehend and use human languages. This includes tasks like Sentiment Analysis, Named Entity Recognition, Machine Translation, Speech Recognition, Text Summarization etc. Companies across various industries are recognizing the need for in-house AI engineers to develop their own NLP tools.

In this essay, I will look analyze with detail two different job NLP related job advertisements and an NLP related project. I will also outline my relevant skills and experiences and develop a plan to bridge the gap between my current skillset and what the industry is looking for.

2. Analysis of NLP related job advertisements

2.1 Generative AI Engineer – Morgan Mckinley

About:

Morgan McKinley is a talent services firm which works with both employers and jobseekers to deliver recruitment and talent-search solutions. Its services specialize in C-suite executive searches, and workforce solutions such as RPO and MSP.

Role:

The Generative AI Engineer position has a focus the financial sector where they will be developing and deploying AI-driven solutions. Key responsibilities include working on the architecture and development of chatbots, intelligent agents. The Engineer will also be responsible for optimizing and developing transformer models like GPT and BERT. Finally, they will be integrating AI systems into real-world applications whilst collaborating with Data Scientists and Software Engineers. Skills required include experience in Python, TensorFlow, PyTorch, and deep learning, as well as hands-on experience in building and deploying generative AI solutions.

Alignment:

This role aligns with the NLP industry demands as financial services sector increasingly recognizes the need to adopt AI for automated customer support, fraud detection, and

predictive analytics. Having a dedicated AI engineer will give Morgan Mckinley a competitive advantage as it will always be using the latest Gen AI solutions internally.

2.2 Senior AI Consultant - NLP & LLM – Blackbook.ai

About:

Blackbook.ai is a global consulting company that focuses on delivering cutting-edge data-analytics and AI solutions to its clients.

Role:

The Senior AI Consultant position at has a focus on the development and implementation of AI solutions, particularly narrowing on Natural Language Processing (NLP) and Large Language Models (LLMs). Key responsibilities include working with semantic analysis, text representation, and machine learning techniques. The consultant needs to have experience in developing higher-level NLP tools such as Text summarization, Natural Language Understanding (NLU), and Natural Language Generation (NLG). Other preferred skills include proficiency in Python or R and experience dealing with large datasets.

Alignment:

This role aligns with growing industry demand for AI-driven solutions in NLP, as businesses increasingly integrate AI-powered automation and analytics. Having a dedicated NLP consultant will benefit Blackbook.ai as it will keep the company at the forefront of cutting-edge AI advancements in commercial settings.

3. Analysis of NLP related project

PDF Chatbot by Clement Vachet

This PDF Chatbot is an AI-powered assistant dedicated to retrieval-augmented generation (RAG), which allows users to query PDF documents efficiently. This project is addressing the need for quick and contextual information retrieval from large PDF documents. Traditional document searches would rely on keyword-based retrieval, often returning irrelevant results as they would focus on specific vocabulary than context. Older methods also had the problem of requiring users to engineer their queries to find the specific information they needed. This chatbot is an upgrade in the sense that it is able to extract semantic meanings. The tool also has a conversational memory feature which improves use experience through multi-turn interactions. It also provides references which improves transparency and reliability of the tool.

Impact

The project will have an impact across various industries. For example:

- Legal & Compliance: Lawyers will be able to swiftly retrieve relevant case and regulatory documents, which will reduce manual research time and improve decision-making efficiency and workplace productivity.
- Finance: Financial analysts will be able to extract key insights from financial reports and contracts. This will streamline risk assessment.
- Academia & Research: Researchers will be able to more efficiently interact with and use academic papers and technical documents, which will quicker research and knowledge synthesis.
- Healthcare: Medical professionals will be able to efficiently analyze patient records, clinical trial reports, and research papers, which will improve diagnostic accuracy and treatment planning.
- Human Resources & Talent Recruitment: HR teams will be able to process and analyze resumes, policy documents, and compliance guidelines in a much more efficient manner

Skill Reflection and Skill Development

My current skills align quite well with the requirements for the Generative AI engineer, the Senior AI Consultant role and the PDF Chatbot project. I have experience in working on a GPT transformer models in my side project. I am also proficient with Python and pare TensorFlow, skills I have learned through university and worked on in my spare time. Additionally, I am also finetuning a chatbot for a UTS Startup that I am working for.

However, I lack experience in certain tasks such as working with large datasets, sentiment analysis, integrating AI solutions etc. I also lack expertise in NLP development as my projects have been quite limited in scope and are nowhere near as good as what the jobs are looking for. I also lack any formal experience at a real workplace to use my skills. To bridge these gaps, I plan to:

- Contribute to open-source projects on GitHub and Hugging Face
- Learn to work with larger datasets and increase the scope of my projects