Classification of Product Manager types to understand the job market

AI/ML PM **Cloud PM**

API PM **Data PM** **Fintech PM**

Platform PM

Project Goal

Use NLP techniques to classify Product Manager (PM) job postings into specialized categories (AI/ ML PM, Data PM) to help students & professionals to plan their careers and understand the market trends.

Data Collection

Scraped 5000 job postings from Indeed.com

Data Annotation

- Created labeling guidelines for 9 PM categories
- Annotated 100 job postings and calculated Inter-Annotator Agreement (Cohen's Kappa)
- Limited job postings to 512 tokens and annotated 734 additional posts.
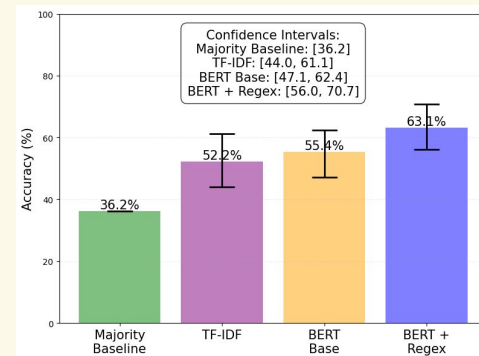
Feature Engineering & Model Selection

- *BERT Embeddings + Fully Connected Neural Network*: Context-aware representation connected to a layer for multi-class classification
- *Enhanced BERT-based classification with Regular Expressions*: tailored preprocessing to focus on job responsibilities
- *TF-IDF + Logistic Regression (LR)*: Term-based representation of job descriptions paired with a classifier

Evaluation

- Metrics: Accuracy (Confidence Interval), Precision, Recall, F1
- Qualitative: Classification report, misclassification examples

Findings

Enhanced BERT Model with Regex: Reached the **best performance 63.10% accuracy**

Confidence Intervals:
Majority Baseline: [36.2]
TF-IDF: [44.0, 61.1]
BERT Base: [47.1, 62.4]
BERT + Regex: [56.0, 70.7]

Product Manager, Cloud TPU

Google   Sunnyvale, CA, USA; Kirkland, WA, USA   Advanced

Apply

Note: By applying to this position you will have an opportunity to share your prefer
Sunnyvale, CA, USA; Kirkland, WA, USA.

Minimum qualifications:

- Bachelor's degree or equivalent practical experience.
- 8 years of experience in product management or related technical role.
- Experience in one or more of the following: ML infrastructure, hardware, da

Preferred qualifications:

- Master's degree in a technology or business related field.
- Experience developing/launching hardware products or technologies.

About the job

At Google, we put our users first. The world is always changing, so we need P and excited to work on products that affect millions of people every day.

In this role, you will work cross-functionally to guide products from conceptio business worlds. You can break down complex problems into steps that drive

Responsibilities

- Work with external customers to prioritize feature requests and build a u Google.
- Work cross-functionally to assess and select the most critical problems multi-year roadmaps that intersect data center and infrastructure strate
- Drive product roadmap and strategy in collaboration with hardware, soft

Gemini Cloud Assist Senior Product Manager - Classification Visualization

Gemini Cloud Assist Senior Product Manager, Google Cloud
Note: By applying to this position you will have an opportunity to share your preferred working location from the following: Sunnyvale, CA, USA; Cambridge, MA, USA.

Minimum qualifications:
* Bachelor's degree or equivalent practical experience.
* 8 years of experience in product management or related technical role.
* 3 years of experience taking technical products from conception to launch.
* Experience with the domain area of Generative AI or Large Language Models.

Preferred qualifications:
* Master's degree in a technology or business related field.
* 5 years of experience working cross-functionally with engineering, UX/UI, sales finance, and other stakeholders.
* 5 years of experience in a business function or role (e.g., strategic marketing, business operations, consulting).
* 4 years of experience in a role preparing and delivering technical presentations to senior leadership.
* 3 years of experience in software development or engineering.
* 3 years of people management experience with direct reports, and in technical leadership.

About the job
At Google, we put our users first. The world is always changing, so we need Product Managers who are continuously adapting and excited to work on products that affect millions of people every day.In this role, you will work cross-functionally to guide products from conception to launch by connecting the technical and business worlds. You can break down complex problems into steps that drive product development.One of the many reasons Google consistently brings innovative, world-changing products to market is because of the collaborative work we do in Product Management. Our team works closely with creative engineers, designers, marketers, etc. to help design and develop technologies that improve access to the world's information. We're responsible for guiding products throughout the execution cycle, focusing specifically on analyzing, positioning, packaging, promoting, and tailoring our solutions to our users.

The team's mission is to integrate autonomous, assistive, and intelligent experiences to transform the way customers use Google Cloud products.
Google Cloud accelerates every organization's ability to digitally transform its business and industry. We deliver enterprise-grade solutions that leverage Google's cutting-edge technology, and tools that help developers build more sustainably. Customers in more than 200 countries and territories turn to Google Cloud as their trusted partner to enable growth and solve their most critical business problems.
Responsibilities
* Develop a Gemini Cloud Assist roadmap that defines how Generative AI assists the user in application life-cycle management workflows such as design, deployment, troubleshooting, and optimization, including a concrete plan with specific feature specifications and implementation timelines.
* Build a plan that defines how Generative AI capabilities contribute to the solutions and to a high-quality user experience, including data modeling and collection, evaluation, and serving/inference and quality mechanisms (e.g., prompt engineering, RAG, data indexing, and embedding).
* Manage customer needs, and ensure solutions address real-world customer challenges.

Legend:
- True Label (AI/ML)
- Method 1: BERT First 512 Tokens (Cloud)
- Method 2: BERT 512 Tokens Regex on Responsibilities (AI/ML)
- Method 3: TFIDF (Cloud)

Note: Colored highlights represent classification decision contributions across methods.

Method 1 analyzes the first 512 tokens of job posts with job titles

Method 2 analyzes 512 tokens starting from '**About the Job**' section

Method 3 (TFIDF) utilizes domain-specific keywords for cloud computing, terminology includes **Google**, **technical**, and **cloud** (Embeddings).