CAPSTONE PROJECT

ANALISIS TREN PEKERJAAN

Using Generative AI

KEANE WILSON PRAKOSO

DATASET LINK

- Nama Dataset : ai_job_dataset.csv
- Sumber : Kaggle [https://www.kaggle.com/datasets/bismasajjad/global-ai-job-market-and-salary-trends-2025/data]
- Deskripsi : This dataset provides an extensive analysis of the artificial intelligence job market with over 15,000 real job postings collected from major job platforms worldwide. It includes detailed salary information, job requirements, company insights, and geographic trends.

PROJECT **OVERVIEW**

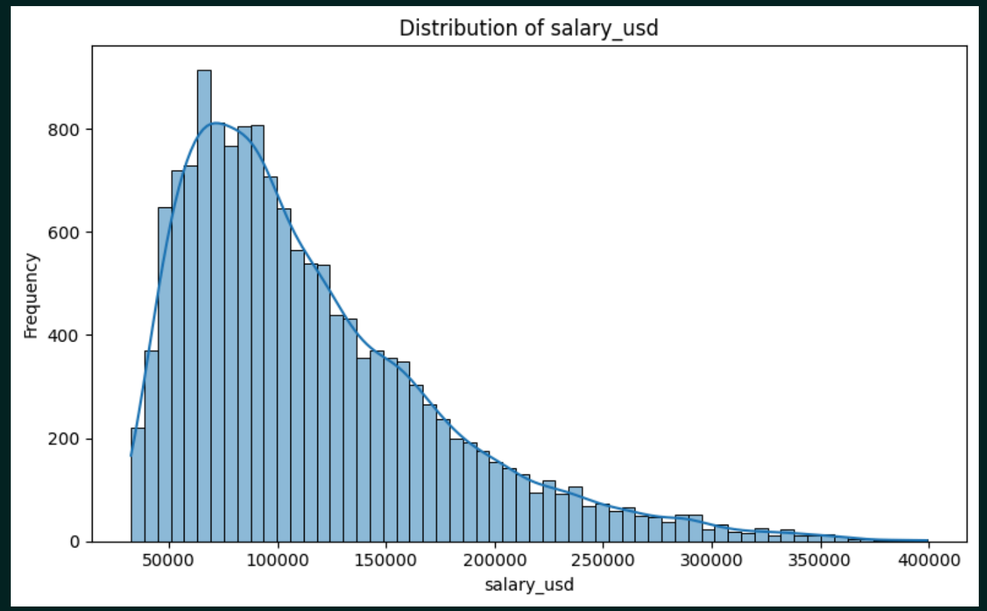
- Analisis Pasar Kerja AI Global.
- Tujuan: Mengidentifikasi tren pekerjaan, keterampilan, dan gaji di sektor AI pada berbagai negara.
- Metodologi: Data Collection, Exploratory Data Analysis (EDA), Insight Generation dengan IBM Granite.
- Output: Ringkasan job title & skill paling dicari per negara. Rata-rata gaji AI (jika tersedia). Insight global mengenai tren pasar kerja AI. Rekomendasi karir bagi profesional AI.

ANALYSIS PROCESS

- Data Collection & Cleaning (Kaggle, Google Colab)
- Exploratory Data Analysis (Google Colab)
- Visualization Data dengan Graph (Google Colab)
- Data Classification dengan Python (Google Colab)
- Insight Generation dengan IBM Granite. (Google Colab)

INSIGHT & FINDINGS

- Visualisasi Data
  - Grafik batang jumlah lowongan per negara.
  - Diagram skill paling banyak dicari secara global maupun per negara.
  - Boxplot/rata-rata gaji berdasarkan negara & job title.
  - Wordcloud untuk skill dominan.
- Insight Teks (IBM Granite AI) (in English)
  - Ringkasan tren pekerjaan AI global.
  - Pekerjaan & skill paling diminati per negara.
  - Rekomendasi praktis bagi pencari kerja (misalnya skill apa yang sebaiknya dipelajari).
  - Perbandingan gaji antar negara sebagai gambaran peluang karier.




```
1. The most in-demand job titles in Japan's AI sector are:
   - Machine Learning Researcher
   - AI Research Scientist
   - Robotics Engineer
   - AI Software Engineer
   - Machine Learning Engineer

2. The most frequently required skills for these roles are:
   - Python
   - Kubernetes
   - SQL
   - Java
   - Git

3. The average salary for these AI-related positions in USD is approximately 86,861.11.

4. Insight: These roles and skills are significant in Japan as the country is rapidly integrating AI and robotics i


=== Global Summary ===

1. **Common global trends in AI job demand:**
   - There is a consistent high demand for AI Specialists, Machine Learning Engineers, and Data Scientists across a
   - Python is the most frequently required programming skill globally, emphasizing its dominance as the go-to lang

2. **Key differences between countries in terms of roles, skills, and salary:**
   - Salaries for AI professionals vary significantly by country, with Switzerland offering the highest average sal
   - Certain countries, such as China and Switzerland, show a stronger preference for Linux and Kubernetes, reflect
   - Job titles and their relative demand differ across countries, with some nations like Canada and Singapore plac
```

CONCLUSION & RECOMMENDATIONS

Conclusion

- Pasar kerja AI menunjukkan peningkatan signifikan di berbagai negara.
- Job titles yang paling dicari konsisten di bidang Machine Learning Researcher, AI Software Engineer, Autonomous Systems Engineer, dan Machine Learning Engineer.
- Skill utama yang berulang adalah Python, SQL, TensorFlow, Linux, dan Cloud Computing.
- Perbedaan antar negara muncul pada fokus industri (misalnya autonomous systems di China vs. healthcare AI di US) serta rata-rata gaji.

Recommendations

Bagi Profesional:

- Fokus menguasai skill inti (Python, TensorFlow, Cloud tools) yang dibutuhkan secara global.
- Pertimbangkan spesialisasi sesuai tren negara (contoh: autonomous systems di China, healthcare AI di US, fintech AI di UK).

Bagi Institusi Pendidikan:

- Perkuat kurikulum pada skill AI praktis yang langsung relevan dengan kebutuhan industri.

Bagi Perusahaan:

- Sesuaikan strategi rekrutmen dengan tren global dan lokal agar lebih kompetitif.

AI SUPPORT EXPLANATION

Peran IBM Granite dalam Analisis

- Model AI Generatif : Granite 3.3 8B Instruct digunakan untuk menghasilkan ringkasan dan wawasan berbasis data.
- Kemampuan Multimodal : Mampu memahami dan menghasilkan teks dalam berbagai format dan konteks.
- Keamanan dan Kepercayaan : Dapat dilatih dengan dataset untuk memberikan referensi.
- Kustomisasi : Dapat disesuaikan dengan kebutuhan spesifik industri dan bisnis.