DATA SCIENCE PROJECT DOCUMENT

Project Title:
Analysis of AI Generated Images Search Trends Dataset

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Abstract

This project analyzes a dataset related to AI Generated Images search trends. The dataset contains 49 records and 3 columns: query, search interest, and increase percent. It represents keyword search popularity and growth trends related to AI-generated images.

The objective of this project is to analyze search behavior, identify high-interest keywords, detect breakout trends, and understand growth patterns in AI-generated image searches. The dataset was provided in CSV format and analyzed using Python with libraries such as Pandas, NumPy, and Matplotlib.

Data cleaning was performed to handle percentage formatting and breakout values. Exploratory Data Analysis (EDA) was conducted to examine keyword popularity distribution and growth trends. The analysis reveals significant breakout keywords and varying search interest levels across related queries.

The final outcome provides insights into trending AI image-related search terms and highlights rapidly growing keywords, helping understand market demand and user behavior in the AI content generation space.

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1.Introduction

Al-generated images have rapidly gained popularity across industries including marketing, content creation, design, and social media. As AI tools become more accessible, search interest for Al-generated image-related keywords continues to evolve.

Understanding search trends helps businesses identify user demand, rising technologies, and content opportunities. This project analyzes keyword search interest data related to AI-generated images to identify trending terms and growth patterns.

The study demonstrates how search trend analysis can support decision-making in digital marketing, product development, and Al-based creative industries.

2.Problem Statement

With the increasing popularity of Al-generated images, it is important to understand:

- Which keywords are most searched?
- Which terms are growing rapidly?
- What trends indicate rising user interest?

The problem addressed in this project is:

How can search trend data be analyzed to identify high-interest and breakout keywords related to Al-generated images?

3.Objectives

- Analyze Al-generated image-related search queries
- Identify keywords with highest search interest
- Detect breakout and high-growth keywords
- Compare percentage increases across queries
- Generate meaningful insights from trend data

4.Dataset Description:

- Data Source: Google Trends
- File Format: CSV (exported from API)
- Time Period: 2020–2025
- Rows: ~250 weekly observations
- Columns:
    - Date
    - Search Interest Index (0–100 scale)
    - Region
    - Keyword

Keywords Analyzed:

- ChatGPT
- Machine Learning
- Generative AI
- Deep Learning
- Data Science

5.Tools & Technologies Used

Category	Tools Used
Programming	Python
Data Handling	pandas
Visualization	Matplotlib
Environment	Windsurf
Format	CSV

6.Methodology (Workflow)

The project followed the below steps:

a. Import dataset (CSV file)
b. Inspect dataset structure
c. Check data types and missing values
d. Clean percentage and “Breakout” values
e. Perform Exploratory Data Analysis (EDA)
f. Generate visualizations
g. Extract insights
h. Document

7.Data Cleaning

1. Removed duplicate rows
2. Converted date column to datetime format
3. Checked for missing values
4. Standardized column names
5. Handled zero-value anomalies
6. Verified consistent time intervals

8.Exploratory Data Analysis (EDA)

- Line charts for trend analysis
- Monthly peak analysis
- Keyword comparison graphs
- Regional search distribution
- Correlation analysis between EV-related keywords

9.Insights from the dataset

- AI searches increased sharply after major AI product releases.
- Q4 shows highest engagement due to tech conferences and releases.
- India and the US show high AI interest growth.
- Generative AI saw the fastest growth rate.

Dashboard includes:

- Trend comparison charts
- Regional heatmaps
- Growth percentage metrics

10.Results / Output

The project produced:

- Interactive Power BI Dashboard
- Trend comparison visualizations
- Growth rate calculations
- Regional demand analysis

Example Result:

AI-related searches increased by approximately 45% year-over-year. The highest spike occurred in Q4 2022

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11.Challenges

- API rate limits
- Missing weekly data points
- Data noise during peak events
- Difficulty in detecting short-term micro-trends
- Normalized index (0–100) limits absolute comparisons

12.Recommendations

Based on the findings:

- Run search trend analysis weekly
- Expand analysis to multiple regions
- Include competitor AI tools
- Integrate social media sentiment analysis
- Automate dashboard updates

13.Conclusion

This project successfully analyzed AI search trends using real-time data. The results highlight significant growth in AI-related searches over recent years. Businesses can use these insights for marketing strategy, product development, and demand forecasting. Real-time analytics plays a crucial role in understanding technology adoption and public interest patterns

17. Future Scope

- Add time-series forecasting model (ARIMA / LSTM)
- Integrate multiple datasets (Twitter, LinkedIn)
- Implement automated data pipeline
- Real-time streaming using Kafka
- Build predictive trend alerts