Company Atlas

A unified firmographic data platform with thousands of companies from open-source datasets

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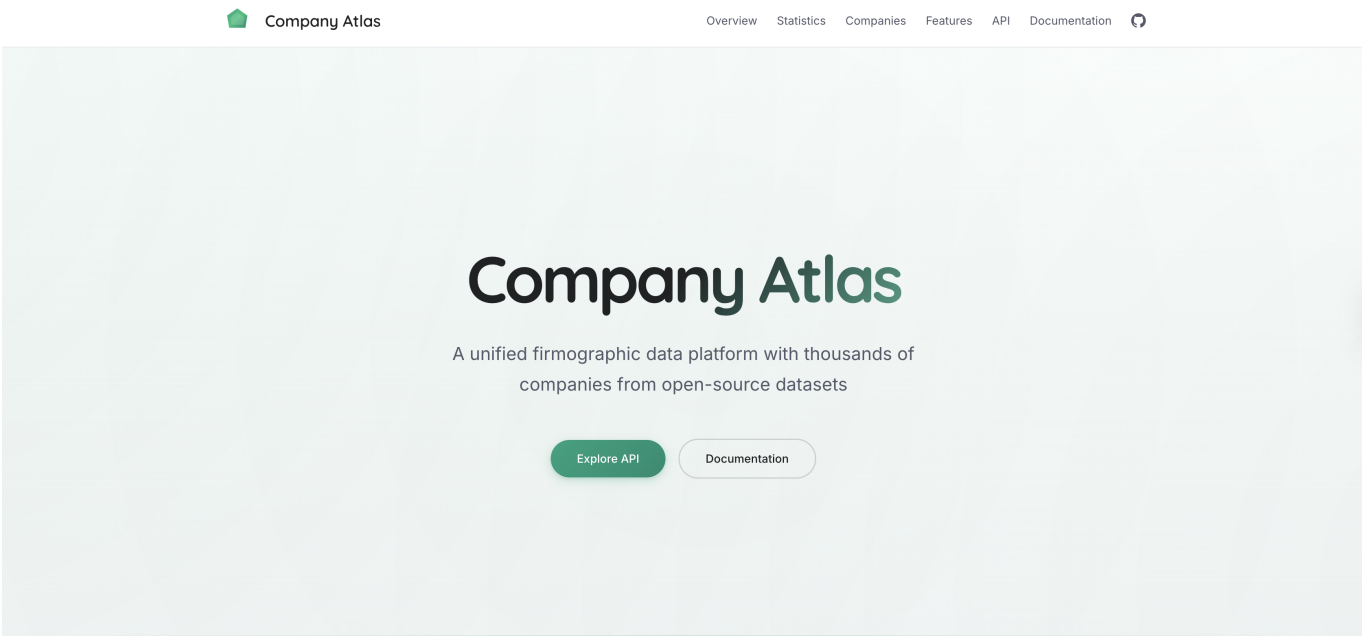
Official Website: https://coresheep.github.io/company-atlas/



📋 Overview

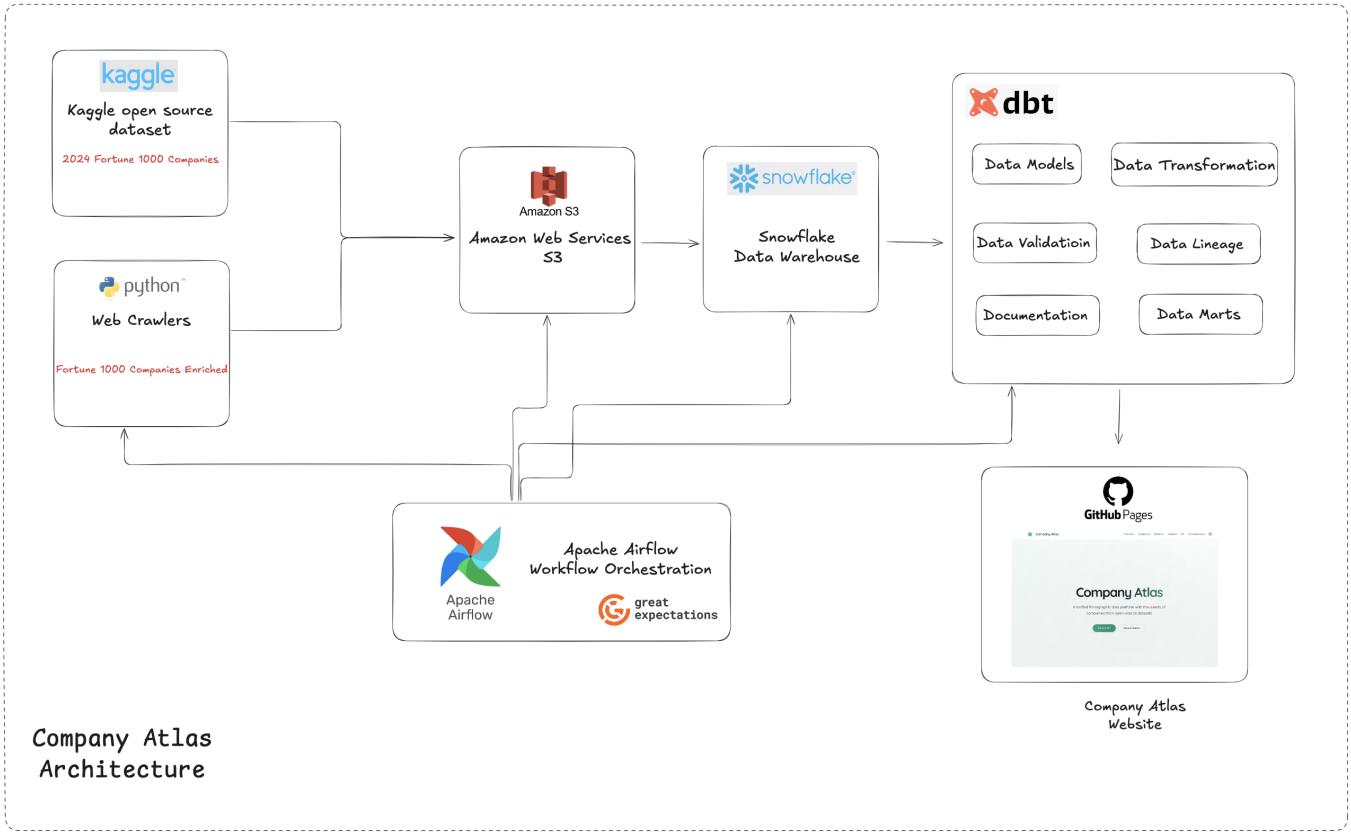
Company Atlas collects, cleans, and normalizes firmographic data from multiple sources, producing an analytics-ready dataset with thousands of companies worldwide. The platform features an elegant interactive website, live dashboards, and a comprehensive REST API for data access.

> **Note**: Currently, the dataset contains the top 1000 Fortune American companies. In the future, we plan to expand the dataset to include more companies worldwide.

Key Highlights

- 🎯 **Multi-Source Data**: Combines Kaggle Fortune 1000 dataset with web crawler enrichment
- 🔄 **Automated Pipeline**: End-to-end data processing with Airflow orchestration
- ✅ **Data Quality**: Comprehensive validation with dbt tests and Great Expectations
- 📊 **Interactive Dashboards**: Real-time visualizations and company profiles
- 🌐 **REST API**: FastAPI-based API with interactive documentation
- 🚀 **Production Ready**: Deployed on GitHub Pages with CI/CD automation

🏗️ Architecture

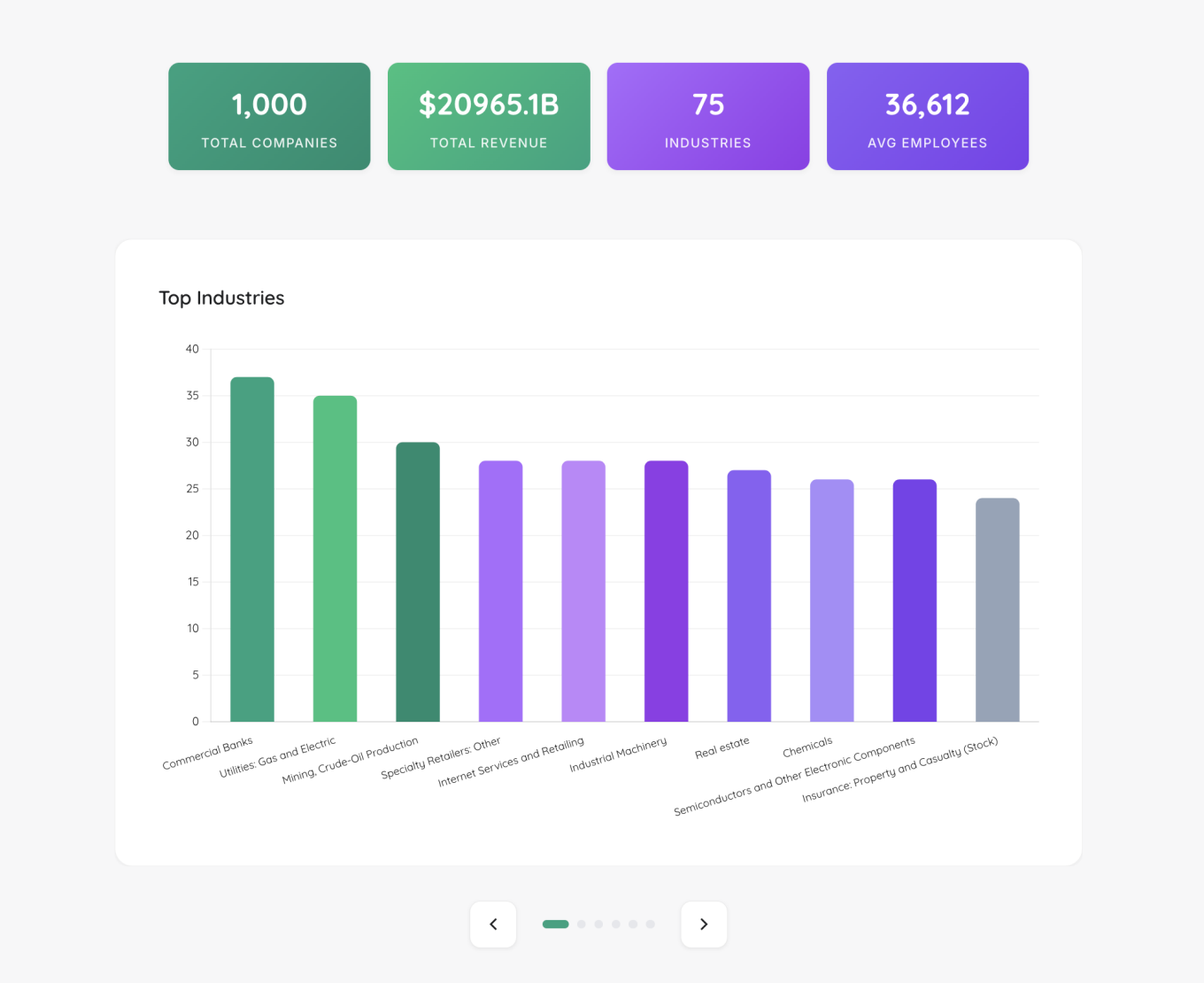


The architecture diagram above illustrates the complete data pipeline flow from data sources to the final user-facing website. The system integrates multiple components:

- **Data Sources**: Kaggle open-source datasets and Python web crawlers
- **Cloud Storage**: Amazon Web Services S3 for raw data storage
- **Data Warehouse**: Snowflake for staging and data warehousing
- **Data Pipelines**: Staging → Raw → Bronze → Marts (dbt transformation layers)
- **Orchestration**: Apache Airflow for workflow automation
- **Data Transformation**: dbt for modeling, transformation, validation, and marts creation
- **API & Presentation**: FastAPI REST API and Company Atlas Website

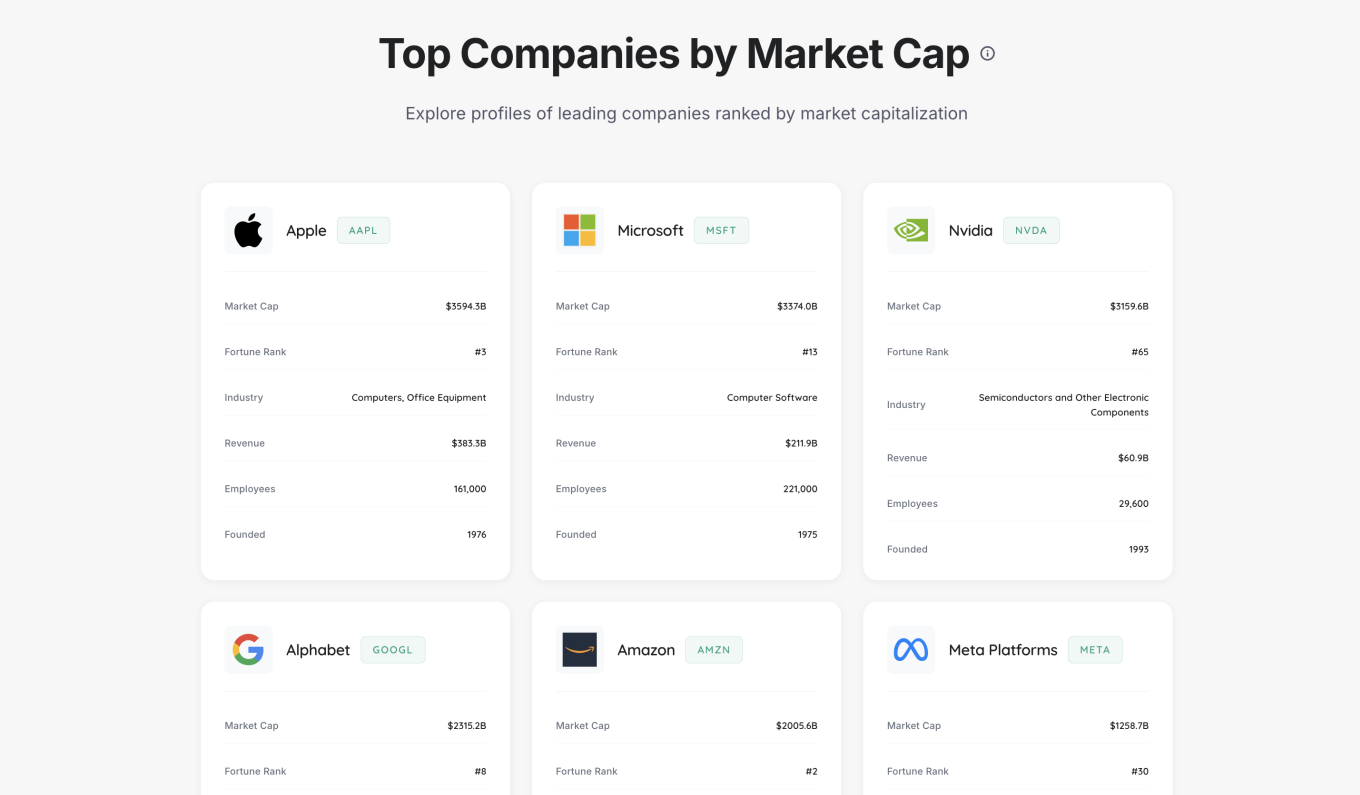
✨ Features

📊 Statistics Dashboard



- **Total Companies**: Count of all companies in the dataset
- **Total Revenue**: Aggregate revenue across all companies
- **Industries**: Number of unique industries
- **Average Employees**: Mean employee count

🏢 Company Profiles



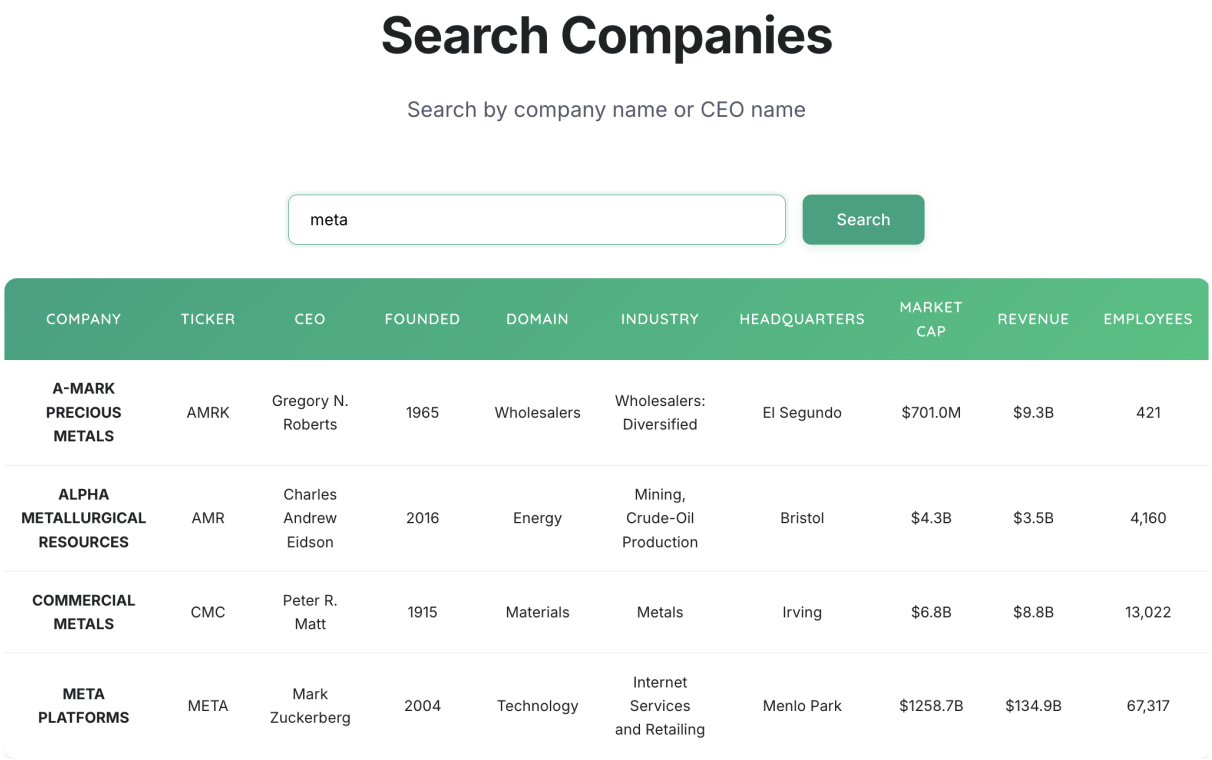
- **Top Companies by Market Cap**: Display of leading companies with logos
- **Company Details**: Market cap, Fortune rank, industry, revenue, employees, founded year
- **Interactive Cards**: Elegant company profile cards with visual hierarchy

📈 Live Dashboards

Interactive carousel with multiple visualizations:

- **Top Industries**: Bar chart showing industry distribution
- **Revenue Distribution**: Histogram of company revenues
- **City Distribution**: Geographic distribution of company headquarters
- **Employee Count Distribution**: Workforce size analysis
- **Revenue % Change**: Year-over-year revenue growth/decline
- **Revenue Growth & Decline**: Combined visualization of top performers

🔍 Interactive Search



- Search by company name or CEO name
- Real-time filtering and results display
- Sortable table with key company metrics
- Displays: company name, ticker, CEO, founded year, domain, industry, headquarters, market cap, revenue

🌐 REST API

Example Request

```
GET /api/v1/companies?company_name=Apple&page=1&page_size=10
```

Example Response


```
{
  "companies": [
    {
      "company_id": "da35b9f7091c36b82a2e9bc4660eb883",
      "company_name": "APPLE",
      "ticker": "AAPL",
      "fortune_rank": 3,
      "domain": "Technology",
      "industry": "Computers, Office Equipment",
      "country": "U.S.",
      "headquarters_city": "Cupertino",
      "headquarters_state": "California",
      "ceo": "Timothy D. Cook",
      "website": "https://www.apple.com",
      "founded_year": 1976,
      "employee_count": 161000,
      "revenue": 383285000000.0,
      "market_cap_updated_m": 3594309.0,
      "revenue_percent_change": -2.8,
      "profits_m": 96995.0,
      "assets_m": 352583.0,
      "source_system": "kaggle: https://www.kaggle.com/datasets/jeannicolasduval/2024-fortune-1000
      "last_updated_at": "2024-08-05T00:00:00-07:00"
    }
  ],
  "total": 1,
  "page": 1,
  "page_size": 10
}
```


FastAPI-based RESTful API with comprehensive endpoints:

- `GET /api/v1/companies` - Search and retrieve companies with filtering
- `GET /api/v1/companies/{id}` - Get specific company by ID
- `GET /api/v1/statistics` - Dataset statistics and distributions
- `GET /api/v1/industries` - List of all industries
- `GET /api/v1/countries` - List of all countries

Interactive Documentation: Available at `/docs` endpoint with Swagger UI

🔄 Data Pipelines

1. Data Collection

Multi-Source Ingestion:

- **Kaggle Datasets**: Downloads Fortune 1000 2024 dataset from Kaggle

- **Web Crawler**: Enriches company data by scraping additional information (founded year, company details) from web sources
- Data is collected asynchronously using `trio` for efficient concurrent processing

2. Data Ingestion

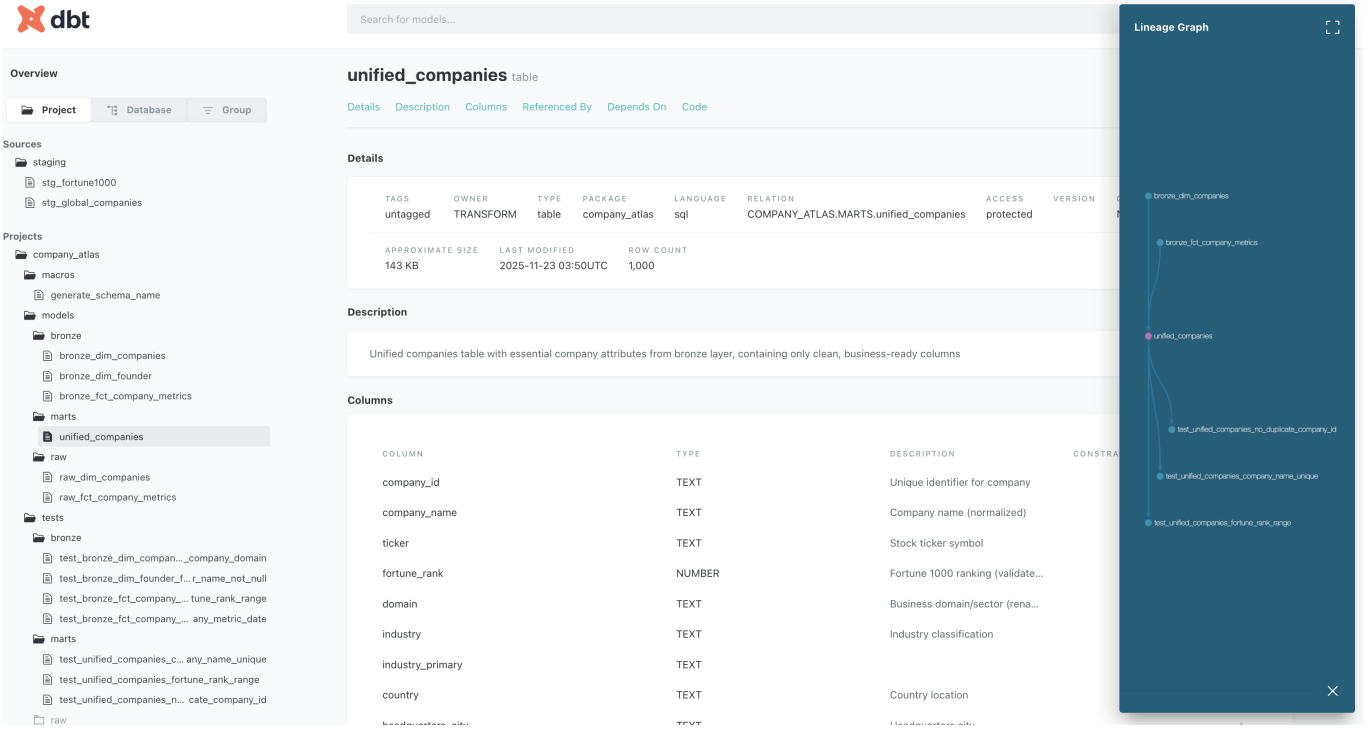
S3 Storage:

- Raw data files (CSV format) are uploaded to AWS S3 buckets
- Files are organized by source: `fortune1000/` and `global_companies/`

Snowflake Staging:

- Data is loaded from S3 to Snowflake staging tables using external stages
- `COPY INTO` commands with proper file format configurations (CSV with header parsing)
- Staging tables: `STG_FORTUNE1000`, `STG_GLOBAL_COMPANIES`

3. Data Modeling with dbt



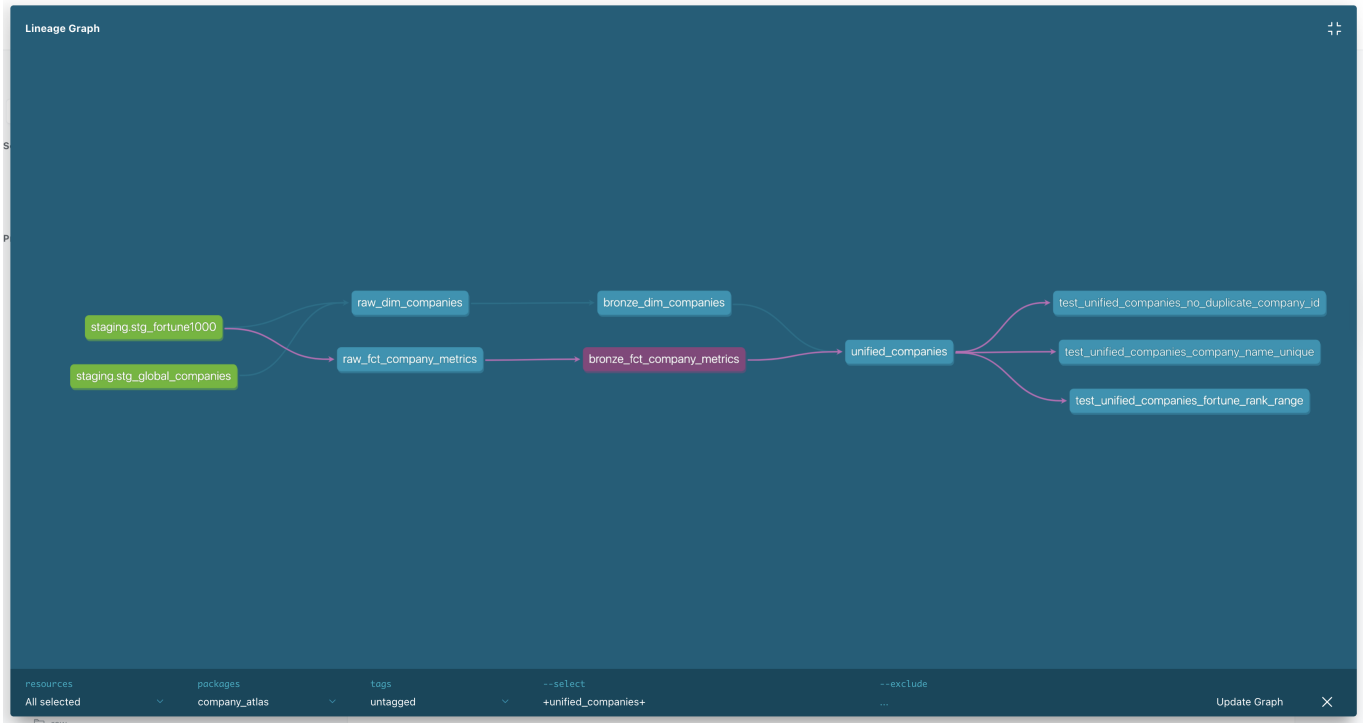
Transformation Layers:

- **Raw Layer**: Initial data cleaning and normalization
  - `raw_dim_companies`: Unified company dimension table
  - `raw_fct_company_metrics`: Company metrics and financial data
- **Bronze Layer**: Data quality validation and standardization
  - `bronze_dim_companies`: Cleaned company master data
  - `bronze_fct_company_metrics`: Validated metrics data
- **Marts Layer**: Analytics-ready unified tables
  - `unified_companies`: Final star schema with joined dimension and fact tables

Data Quality:

- Automatic tests using dbt:
  - Uniqueness tests on `company_name`
  - Not null constraints on key fields
  - Range validation (e.g., Fortune rank 1-1000)
  - Relationship integrity checks

Data Lineage:



The lineage graph above shows the complete data flow from staging tables through raw, bronze, and marts layers, demonstrating how data is transformed and validated at each stage.

4. Orchestration

Apache Airflow:

- Automated workflow scheduling for the entire pipeline (daily schedule)
- DAG: `company_atlas_pipeline` orchestrates the complete data flow

Pipeline Workflow:

1. **Data Ingestion**: Kaggle datasets + Web crawler enrichment
2. **S3 Upload**: Upload raw CSV files to AWS S3
3. **Snowflake Staging**: Load data from S3 to Snowflake staging tables (`STG_FORTUNE1000`, `STG_GLOBAL_COMPANIES`)
4. **dbt Raw Layer**: Run raw layer models for initial data cleaning and normalization
5. **Great Expectations Raw Validation**: Validate raw layer data quality
6. **dbt Bronze Layer**: Run bronze layer models for data quality validation and standardization
7. **Great Expectations Bronze Validation**: Validate bronze layer data quality
8. **dbt Marts Layer**: Run marts layer models to create analytics-ready unified tables
9. **Great Expectations Marts Validation**: Validate marts layer data quality
10. **dbt Tests**: Run comprehensive data quality tests
11. **Website Data Download**: Download unified companies data for website visualization

Task Dependencies:

```
Ingestion → S3 Upload → Snowflake Staging → dbt Raw → GE Raw →
dbt Bronze → GE Bronze → dbt Marts → GE Marts → dbt Tests → Website
Download
```

5. Data Transformation

dbt Models:

- Incremental materialization for efficient updates
- Column normalization and type casting
- Deduplication across multiple sources
- Schema unification (star schema design)
- Automatic timestamp tracking (`loaded_at`, `last_updated_at`)

6. Data Visualization

Interactive Website:

- Live dashboards with Chart.js visualizations
- Real-time statistics and company profiles
- Interactive search functionality
- Responsive design for mobile and desktop

📚 API Documentation

Full API documentation is available on the website:

- **Website Documentation**: https://coresheep.github.io/company-atlas/docs/api.html
- **Interactive API Docs**: http://localhost:8000/docs (when running locally)
- **ReDoc**: http://localhost:8000/redoc (when running locally)

Example Usage

Python:

```python
import requests

# Search for Apple by company name
response = requests.get(
    "http://localhost:8000/api/v1/companies",
    params={
        "company_name": "Apple",
        "page": 1,
        "page_size": 10
    }
)
```

```
companies = response.json()
print(f"Found {companies['total']} companies")
for company in companies['companies']:
    print(f"- {company['company_name']} ({company['domain']})")
    print(f"  Industry: {company['industry']}")
    print(f"  Revenue: ${company['revenue']:,.0f}")
    print(f"  Employees: {company['employee_count']:,}")
```

cURL:

```
# Get statistics
curl "http://localhost:8000/api/v1/statistics"

# Search for Apple
curl "http://localhost:8000/api/v1/companies?company_name=Apple"

# Get specific company by ID
curl "http://localhost:8000/api/v1/companies/{company_id}"
```

🛠️ Technology Stack

- **Data Collection**: Kaggle API, Web Scraping (httpx, BeautifulSoup, trio)
- **Cloud Storage**: AWS S3
- **Data Warehouse**: Snowflake
- **Data Transformation**: dbt (Data Build Tool)
- **Orchestration**: Apache Airflow
- **API**: FastAPI, Uvicorn
- **Frontend**: HTML5, CSS3, JavaScript, Chart.js
- **Deployment**: GitHub Pages

📁 Project Structure

```
company-atlas/
├── pipelines/              # Data pipeline scripts
│   ├── ingestion/         # Data ingestion (Kaggle, web crawler)
│   ├── staging/           # S3 to Snowflake loading
│   └── website/           # Logo fetching and website utilities
├── dbt/                   # dbt models and tests
│   ├── models/
│   │   ├── raw/           # Raw layer models
│   │   ├── bronze/        # Bronze layer models
│   │   └── marts/         # Analytics-ready marts
│   └── schema.yml         # Schema definitions and tests
├── api/                   # FastAPI REST API
│   ├── main.py
│   └── models/
├── website/               # GitHub Pages website
│   ├── index.html
```

```
│   ├── assets/
│   │   ├── css/
│   │   ├── js/
│   │   └── logos/
│   └── docs/
│       └── api.html
├── data/                    # Local data storage
│   ├── raw/                # Raw data files
│   └── marts/              # Processed data
├── images/                  # Documentation images
└── requirements.txt         # Python dependencies
```

🚀 Setup

Prerequisites

- Python 3.9+
- Snowflake account
- AWS account with S3 access
- Kaggle API credentials

Installation

1. Clone the repository:

```
git clone https://github.com/CoreSheep/company-atlas.git
cd company-atlas
```

2. Install Python dependencies:

```
pip install -r requirements.txt
```

3. Set up environment variables:

```
cp .env.example .env
# Edit .env with your credentials (Snowflake, AWS, Kaggle)
```

4. Configure dbt:

```
cd dbt
dbt deps
```

5. Run data pipeline:

```
# Download datasets
python pipelines/ingestion/main_ingestion.py

# Upload to S3
python pipelines/staging/upload_to_s3.py

# Load to Snowflake
# Run SQL scripts in pipelines/staging/

# Run dbt models
cd dbt
dbt run
dbt test
```

📖 Citation

If you use Company Atlas in your research or project, please cite:

```
Li, J. (2025). Company Atlas: A Unified Firmographic Data Platform.
<https://coresheep.github.io/company-atlas/>
```

Author: Jiufeng Li
Project Website: https://coresheep.github.io/company-atlas/
Year: 2025

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