EZI WebScrapper Crawler

Advanced web crawler and scraper with a graphical user interface. MIT Licensed.

Features

1. **Crawling:**
   - BFS (Breadth-First Search) and DFS (Depth-First Search) algorithms.
   - Configurable depth and link limits.
   - `robots.txt` support.
   - Option to stay within the same domain.
2. **Security Bypassing:**
   - User-Agent rotation (configurable list).
   - Proxy support.
   - Captcha Solver adapter (API key).
3. **Filtering:**
   - Regex for allowed and blocked links.
4. **Export:**
   - JSON, CSV, ZIP (with full HTML content).
   - Connection graph visualization.

Setup

The project consists of a Backend (Python/FastAPI) and a Frontend (React/Vite).

Requirements

- Python 3.11+ (https://www.python.org/downloads/)
- Node.js 22+ (https://nodejs.org/en/download)

Step 1: Backend

```
cd backend
# Create virtual environment (if it doesn't exist)
python -m venv .venv

# Activate environment
# Windows:
.\.venv\Scripts\Activate.ps1
# Linux/Mac:
# source .venv/bin/activate

# Install dependencies
pip install -r requirements.txt

# Run server
uvicorn backend_app.main:app --reload
```

The backend will start by default at `http://127.0.0.1:8000`. API Documentation (Swagger): `http://127.0.0.1:8000/docs`.

Step 2: Frontend

In a new terminal window:

```
cd frontend

# Install dependencies
npm install

# Run development server
npm run dev
```

The application will be available at (usually): `http://localhost:5173`

User Guide

Task Configuration (Crawler Config)

In the user interface, you can configure the following parameters:

- **Seed URL**: Starting address (must start with http/https).
- **Max Depth**: Crawling depth (default 3).
- **Search Method**: `BFS` (breadth-first) or `DFS` (depth-first).
- **Hard Link Limit**: Maximum number of visited pages (safeguard against infinite loops).
- **Stay in Domain**: Whether the crawler should move only within the starting domain.
- **Follow Robots.txt**: Whether to respect robots.txt rules.
- **Max Concurrency**: Number of parallel requests (threads).

Advanced Options

- **User Agents**: You can provide a list of User-Agents to be randomized with each request.
- **Proxy List**: List of proxy servers.
- **Link Filters**: Regular expressions (Regex) for filtering links (Allow/Deny).

Results and Export

After the task is finished, you can:

1. View the **graph visualization** of connections between pages.
2. Download data in formats:
    - **JSON/CSV**: Graph structure (nodes and edges).
    - **ZIP**: Zipped HTML files of downloaded pages.

Project Structure

- `backend/` - Crawler logic, API (FastAPI).
    - `backend_app/` - Main application code.
    - `data/` - Saved crawl results (JSON/CSV/HTML).
- `frontend/` - User interface (React + Vite).

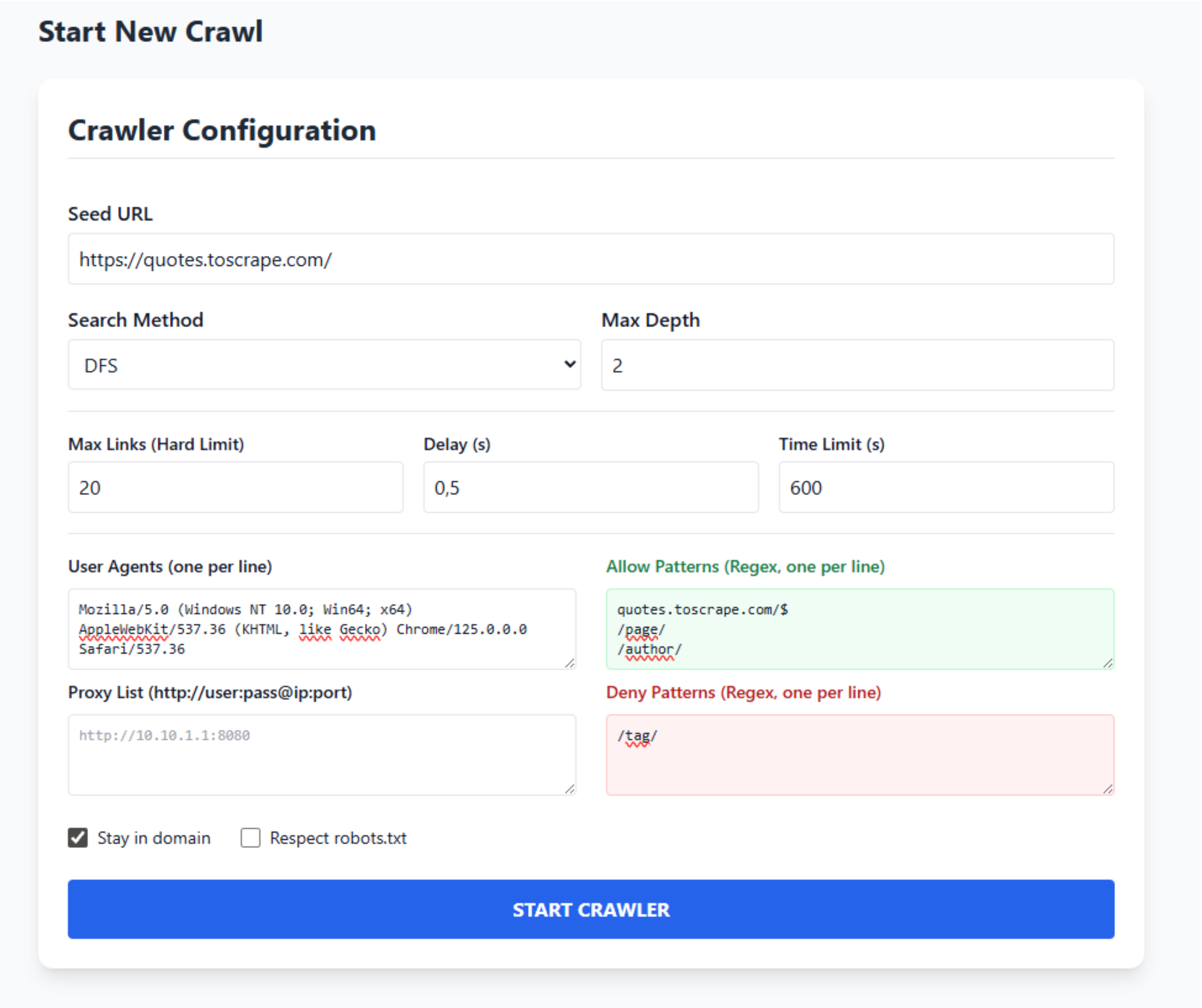
Troubleshooting

- **CORS Error**: Ensure the backend is running on port 8000 and frontend on 5173. If using other ports, update `CORS_ORIGINS` in `backend/backend_app/settings.py`.
- **Write Permissions**: Ensure the `backend/data` folder has write permissions for the user running the script.

Capabilities

Crawling

Creating presets (Job) where you can define your settings:



Start New Crawl

Crawler Configuration

Seed URL: https://quotes.toscrape.com/

Search Method: DFS

Max Depth: 2

Max Links (Hard Limit): 20

Delay (s): 0,5

Time Limit (s): 600

User Agents (one per line):

```
Mozilla/5.0 (Windows NT 10.0; Win64; x64)
AppleWebKit/537.36 (KHTML, like Gecko) Chrome/125.0.0.0
Safari/537.36
```

Allow Patterns (Regex, one per line):

```
quotes.toscrape.com/$
/page/
/author/
```

Proxy List (http://user:pass@ip:port):

```
http://10.10.1.1:8080
```

Deny Patterns (Regex, one per line):

```
/tag/
```

☑ Stay in domain ☐ Respect robots.txt

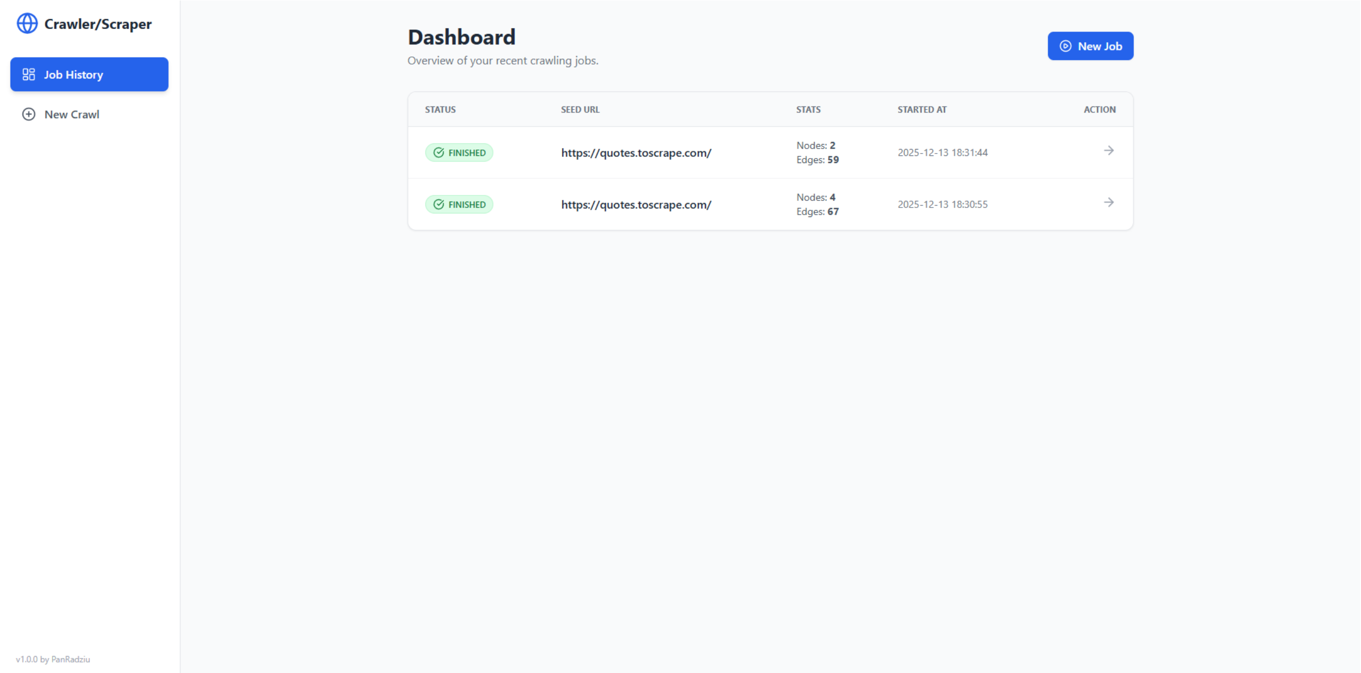
Some explanation:

- **Search Method**: Choose between Breadth-First Search (BFS) or Depth-First Search (DFS) strategies.

- **Link Filters**: Powerful Regex patterns to control the crawler. Use `Allow` for specific paths (e.g., only `/blog/`) and `Deny` to skip unwanted content (e.g., `.pdf` files).
- **User Agents**: Optional configurable list. The crawler will select a random User-Agent for every request to mimic real browsers.
- **Proxy List**: List of proxies to bypass IP blocking.

Running presets

Once you have created your preset, you can see it on the Dashboard and run it:

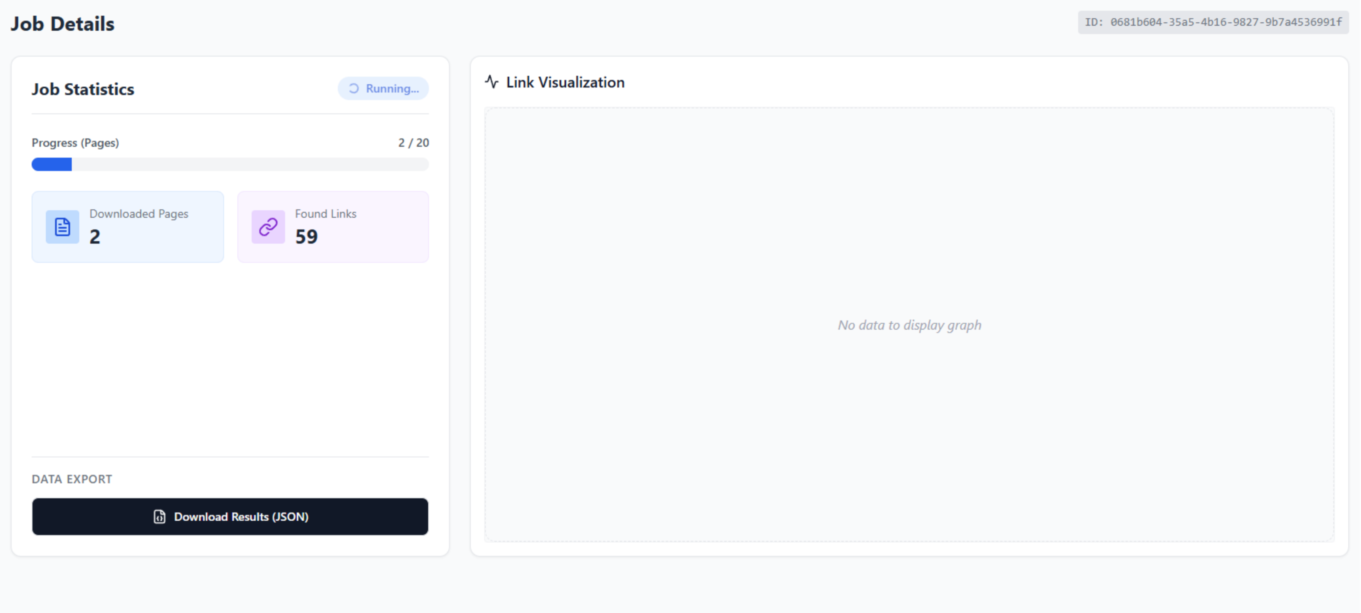


Dashboard

Overview of your recent crawling jobs.

STATUS	SEED URL	STATS	STARTED AT	ACTION
FINISHED	https://quotes.toscrape.com/	Nodes: 2 Edges: 59	2025-12-13 18:31:44	→
FINISHED	https://quotes.toscrape.com/	Nodes: 4 Edges: 67	2025-12-13 18:30:55	→

When you run your preset, a Job is created. In the run tab, you can monitor the real-time progress:



Job Details

ID: 0681b604-35a5-4b16-9827-9b7a4536991f

Job Statistics

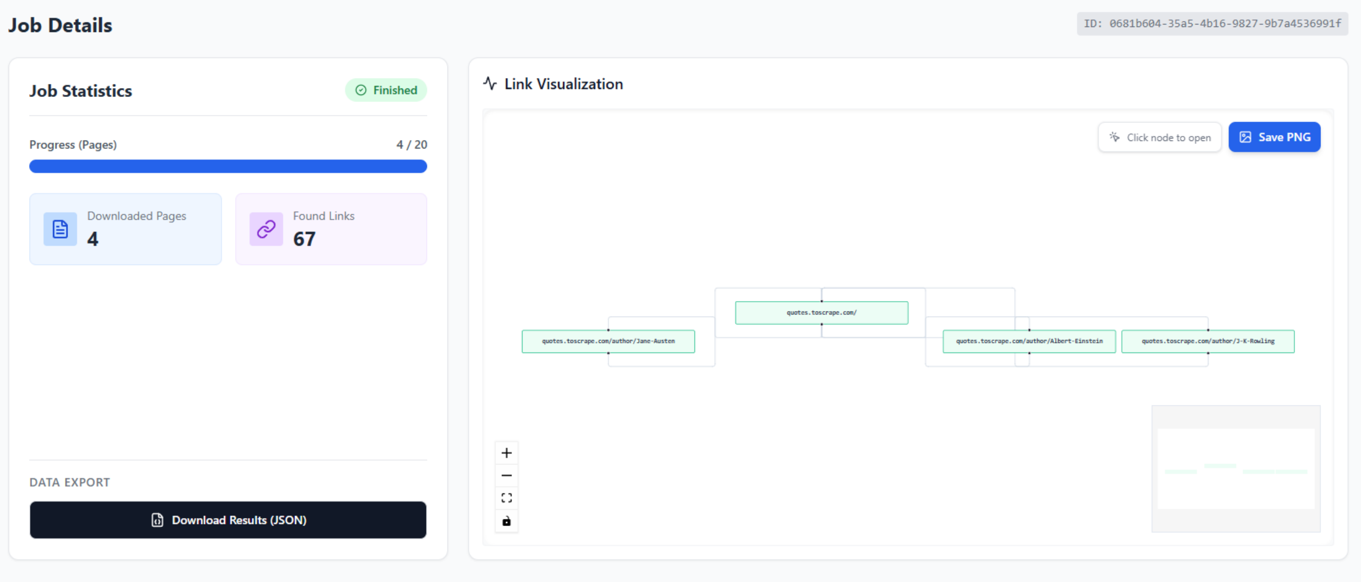
Progress (Pages) 2 / 20

Downloaded Pages 2

Found Links 59

No data to display graph

Once the job is done, you will see a summary of downloaded pages and found links:



Job Details

ID: 0681b604-35a5-4b16-9827-9b7a4536991f

Job Statistics

Finished

Progress (Pages) 4 / 20

Downloaded Pages 4

Found Links 67

DATA EXPORT

Download Results (JSON)
Link Visualization
Click node to open
Save PNG
quotes.toscrape.com/
quotes.toscrape.com/author/Jane-Austen
quotes.toscrape.com/author/Albert-Einstein
quotes.toscrape.com/author/J-K-Rowling
+
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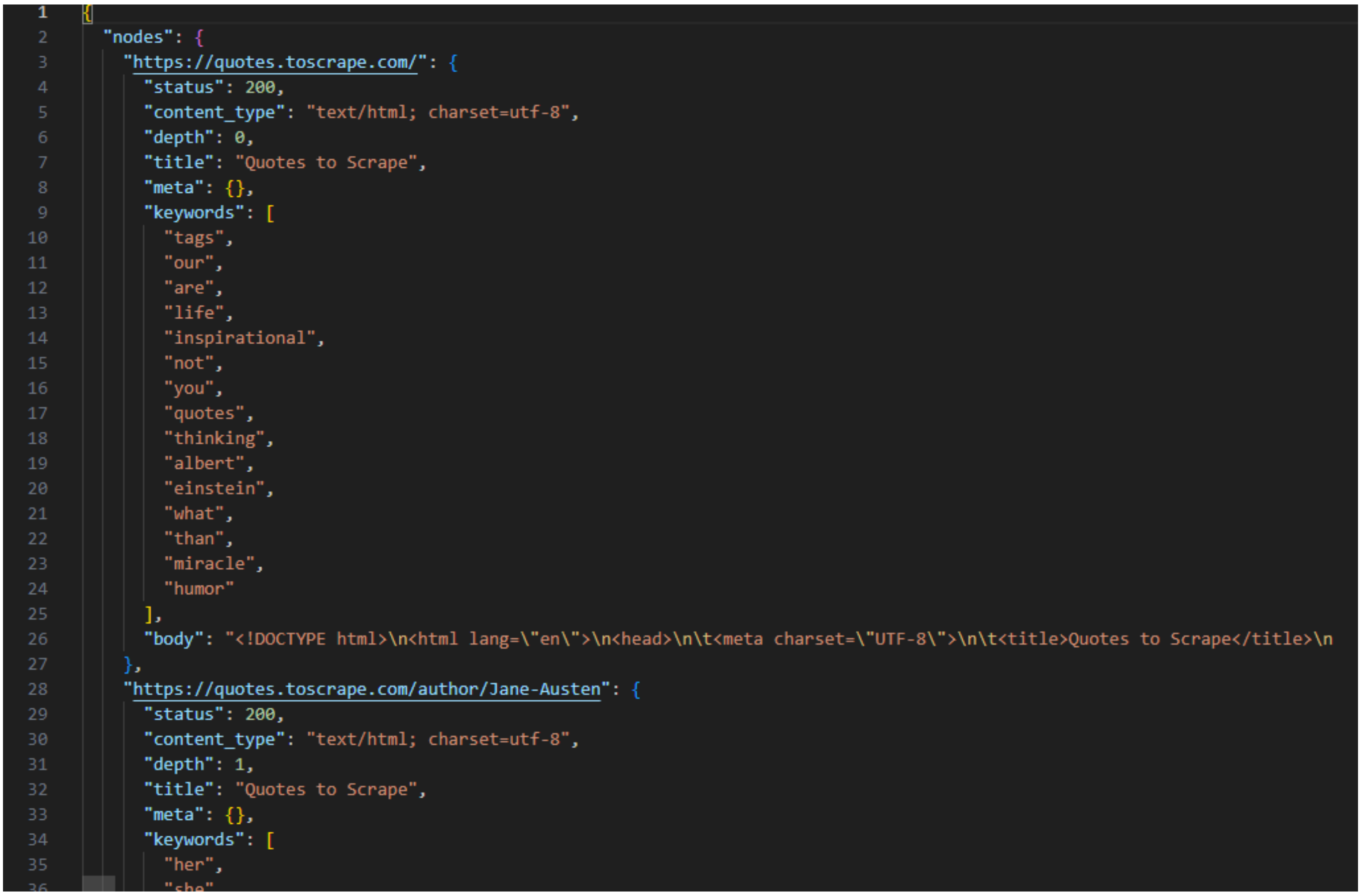
Scraping

When content is fetched, the application extracts URLs, titles, meta tags, keywords, and response headers. It saves everything to local **JSON storage** (`backend/data/`) along with the data needed to represent the graph.

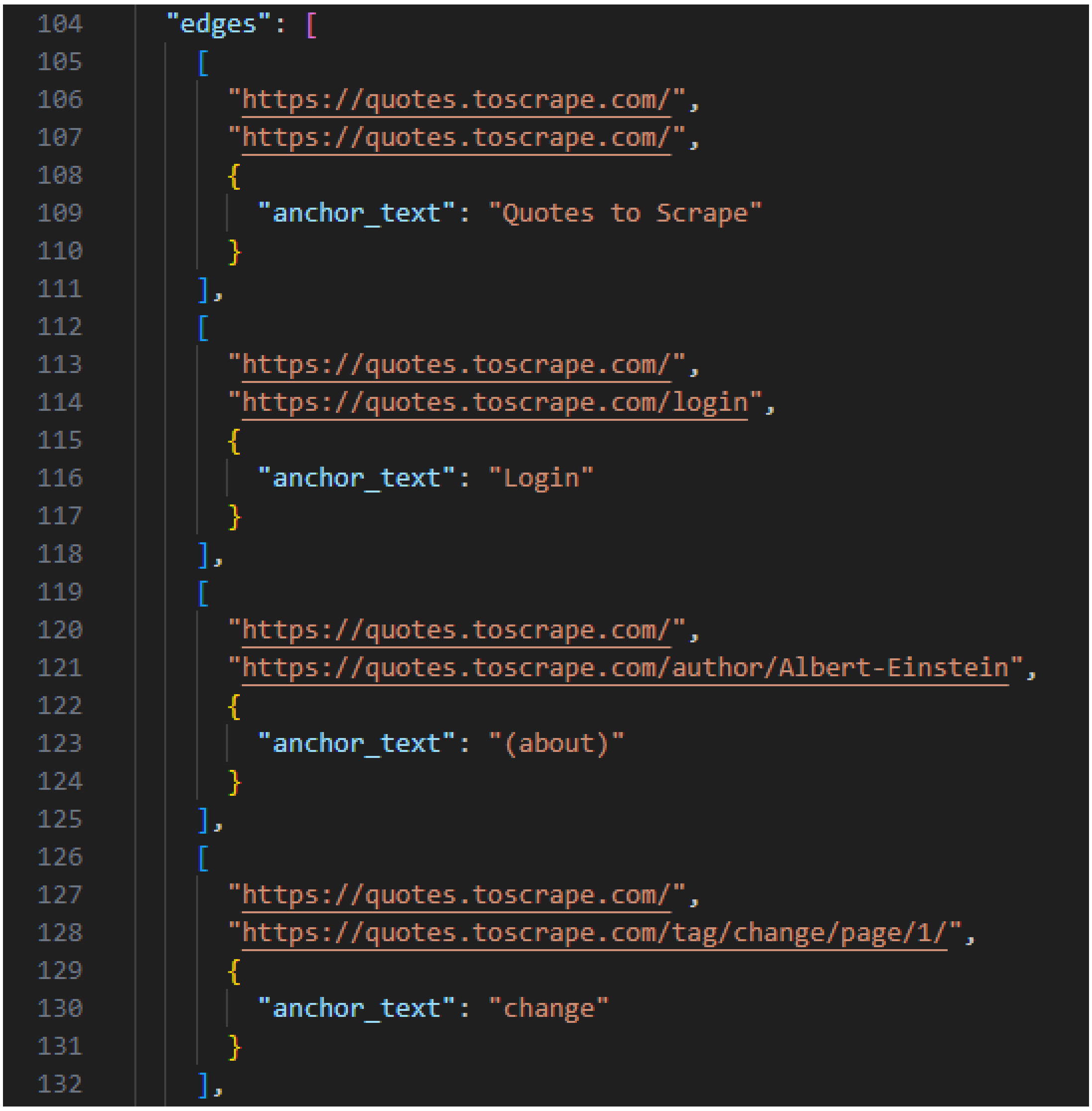
Here you can export scrape results to JSON (even while the run is still in progress).

Nodes Structure (Metadata, Titles, Keywords):



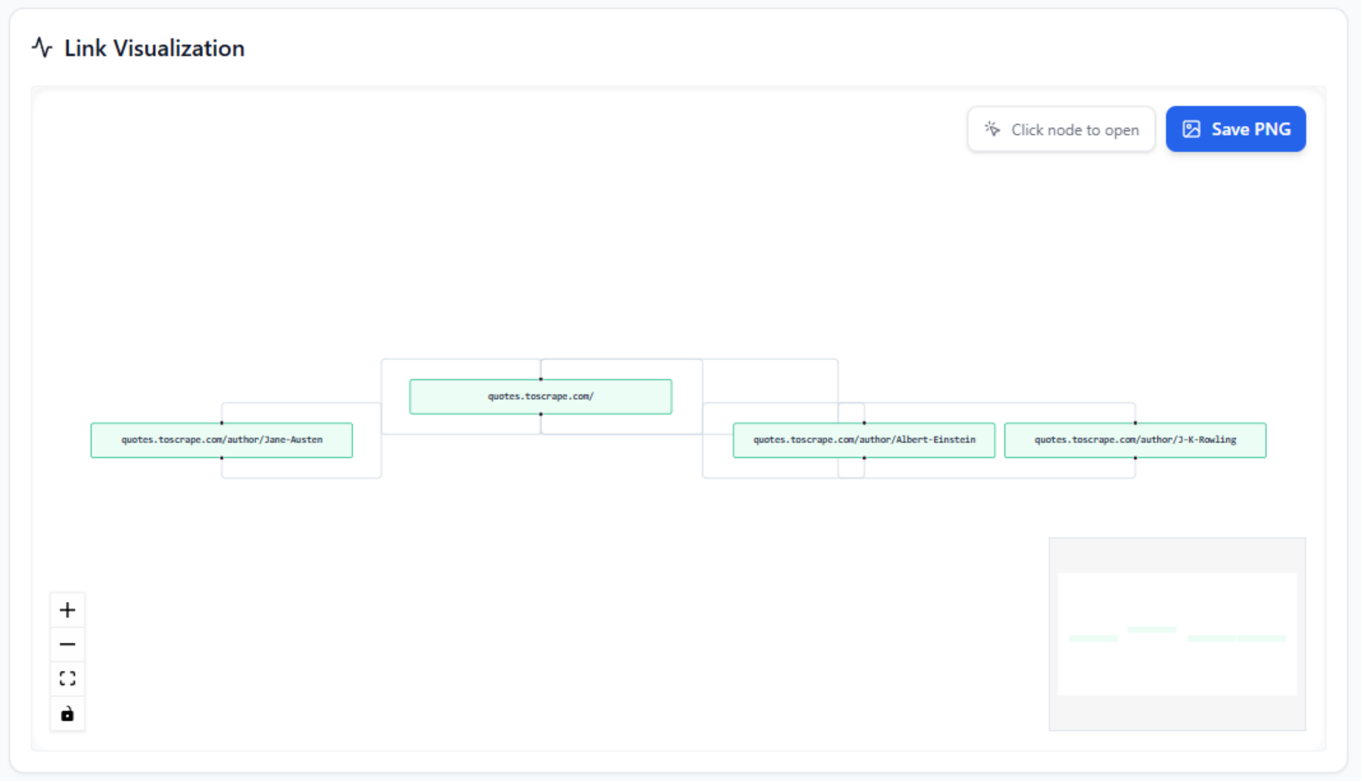
```
{
  "nodes": {
    "https://quotes.toscrape.com/": {
      "status": 200,
      "content_type": "text/html; charset=utf-8",
      "depth": 0,
      "title": "Quotes to Scrape",
      "meta": {},
      "keywords": [
        "tags",
        "our",
        "are",
        "life",
        "inspirational",
        "not",
        "you",
        "quotes",
        "thinking",
        "albert",
        "einstein",
        "what",
        "than",
        "miracle",
        "humor"
      ],
      "body": "<!DOCTYPE html>\n<html lang=\"en\">\n<head>\n\t<meta charset=\"UTF-8\">\n\t<title>Quotes to Scrape</title>\n
    },
    "https://quotes.toscrape.com/author/Jane-Austen": {
      "status": 200,
      "content_type": "text/html; charset=utf-8",
      "depth": 1,
      "title": "Quotes to Scrape",
      "meta": {},
      "keywords": [
        "her",
        "she",
```

Edges Structure (Links between pages):



```
  "edges": [
    [
      "https://quotes.toscrape.com/",
      "https://quotes.toscrape.com/",
      {
        "anchor_text": "Quotes to Scrape"
      }
    ],
    [
      "https://quotes.toscrape.com/",
      "https://quotes.toscrape.com/login",
      {
        "anchor_text": "Login"
      }
    ],
    [
      "https://quotes.toscrape.com/",
      "https://quotes.toscrape.com/author/Albert-Einstein",
      {
        "anchor_text": "(about)"
      }
    ],
    [
      "https://quotes.toscrape.com/",
      "https://quotes.toscrape.com/tag/change/page/1/",
      {
        "anchor_text": "change"
      }
    ],
```

The application allows you to preview your graph visualization (which can be large!). You can interact with nodes (click to open URL) and export the graph as a high-quality **.png**:


Link Visualization
Click node to open
Save PNG
quotes.toscrape.com/
quotes.toscrape.com/author/Jane-Austen
quotes.toscrape.com/author/Albert-Einstein
quotes.toscrape.com/author/J-K-Rowling
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