University of Wisconsin-Madison

Computer Science 839

Data Science: Principles, Algorithms, and Applications

Web Crawling and Data Extracting

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April 12, 2019

1   Web Sources

(1) Internet Movie Database: Internet Movie Database (IMDb) is the world's most popular and authoritative source for movie, TV and celebrity content. Find ratings and reviews for the newest movie and TV shows.

(2) The Movie Database: The Movie Database (TMDb) is a popular, user editable database for movies and TV shows.

2   Method - How we extracted

(1)   In **IMDb** web source, we used the Scrapy recursive web crawling framework to extract data with the help of XPath and CSS selectors.

(2)   In **TMDb**, we first extracted the web page for each movie from the main list and then did the recursive internet crawling on each web page using Scrapy.

3   Type of Entity

Movie: We selected movies as our type of entity.

4   Information of Two Tables

Number of tuples: Since the requirement says, we should have at least 3k tuples and no more than 10k tuples. We kept 6k tuples in each of our tables.

Web Sources	Number of tuples
IMDb	6000
TMDb	6000

Attributes: In both of these two sources, we extracted the following attributes: movie, directors, stars, year, runtime and genres. The type of these attributes are all strings.

Schema:

Attributes	Discription
movie	This attribute describes the name of the movie.
directors	This attribute includes names of all the directors.
stars	This attribute includes names of all the stars.
year	This attribute describes the release year of the movie.
runtime	This attribute describes the length of the movie.
genres	This attribute decribes the type of the movie.

5   Open-source Tool

Scrapy: Scrapy is a web crawling framework, written in Python. Originally designed for web scraping, it can also be used to extract data using APIs or as a general-purpose web crawler. It is currently maintained by Scrapinghub Ltd., a web-scraping development and services company. Using Scrapy, we define spiders for each web source. And Scrapy provides the framework for processing the response for each request fired. Also, support for crawling the multiple links in the HTML is provided by Scrapy.