Scoring Neighborhoods on the Earth

A computational social science project based on crowd-sourcing surveys and Elo Rating System.

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December 12, 2019

Overview of the structure

- elorating package
  - Implement the Elo Rating algorithm and manage a scoring project.
- pp2_app module
  - Use elorating package to measure the urban perception of 56 cities around the world.
- baidu_app module
  - Extend the project to cover mainland China.

Elo Rating System

- An algorithm for calculating the relative skill levels of players in zero-sum games such as chess.
- I think it can be used to reveal collective preferences from individual pairwise voting. (See *Social Welfare Functional* in microeconomics)

Left	Right	VotingOutcome
Hyde Park	Kenwood	Left
University Park	Pilsen	Right
...	...	...

- Scoring neighborhoods across countries based on individual pairwise voting on **street view images**.

elorating Package for Python

- Create, add, remove, and query an element.
- Update rating scores based on pairwise competition.
- Query the rating score of an element.
- Predict winning probability.
- Import/export data from/to CSV files.
- Generate descriptive statistics.
- Normalize the rating scores to some user-defined scales.

Example (Install elorating)

```
>>> pip install /path/to/this/project
```

Scoring Neighborhoods in 56 Cities

- Place Pulse 2.0 data
  - A digital survey to humans
  - Covers 56 cities from 28 countries across 6 continents
- Dimensions:
  - Safety
  - Lively
  - Wealthy
  - Beautiful
  - Depressing
  - Boring

pp2_app: Calculating Perception Scores

pp2.gif

Interactive Maps

Scoring Neighborhoods on the Earth

Extend this project to mainland China

- Retrieve street view images within a user-specified geographical area from Baidu Maps.
- baidu_app

- In progress... (but all the work in Python has been finished.)

Reflections

- Challenges
  - Structuring the project, organizing multiple modules
  - Documentation (`sphinx`)
  - User Interface
- Gains
  - Organizing a full Python project
  - Data processing
  - Data visualization
  - Calling APIs
  - Coding style and documentation (necessary for open-sourcing or collaboration)