Movie-Chain-Runner Problem

Shashank Singh Jimmy Zong

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Outline

Team Members

- Sung Uk Ryu
- Eugene Scanlon
- Shashank Singh
- Jimmy Zong

The Problem

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Find the "longest" list of overlapping titles in a list of movie titles.

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Find the "longest" list of overlapping titles in a list of movie titles.

An Example

In the list

- Day of the Dead
- Live and Let Die
- Dead Poets' Society
- Die Another Day
- The Last Samurai

the "longest" chain is

The Problem

- Equivalent to finding a Longest Simple Path in a directed graph

The Problem

- Equivalent to finding a Longest Simple Path in a directed graph
- The Longest Path Problem is NP-Complete

Previous Attempts

- Summer 2010 – 255 titles
- Fall 2010 – 271 titles (845 words)
- Summer 2011 – 311 titles (997 words)
- Fall 2011 – 323 titles (1030 words)
- Spring 2012 – 327 titles (1055 words)

Benefits

Out group will gain experience

- programming in Python (and maybe C, MATLAB, or another language)
- working as a group toward a common goal
- handling and processing a large data set
- implementing graph algorithms
- designing and implementing approximation algorithms for an NP-hard problem

Approach

- Algorithms
- Project Timeline (Gantt Chart)

Algorithms

Gantt Chart

Evaluation

1. Length of the longest chain we find
2. Compare performance of a few different algorithms
3. Predict runtime for entire computation by solving tractable subproblems

Qualifications

- Sung Uk Ryu
- Eugene Scanlon

Qualifications

- Shashank Singh
  - Senior CS/Math Dual Degree
  - Completed undergrad CS/Math curricula, including courses specifically in Data Structures/Algorithms and Discrete Math (15-121, 15-211, 15-251, 15-451, 21-301, 21-484)
  - TA'd 15-211 and 15-251
  - Have extensive experience analyzing large data sets for research
- Jimmy Zong
  - Sophomore CS major
  - Completed 15-112, ...
  - Done ... projects

Summary

Sources

- Gantt Chart created using software from the Gantt Project
  - http://www.ganttproject.biz/ (accessed June 4, 2013)