CS15-319 / 15-619
Cloud Computing

Recitation 14

April 23rd, 2013

جامعة كارنيجي ميلون في قطر
Carnegie Mellon University Qatar

Announcements

- Checkpoint Quiz Unit 5, due on:
  - Friday May 3rd at midnight
- Project 4, Part c, due on:
  - Friday May 3rd at midnight
- Last Recitation (#15):
  - Tuesday, April 30th

Announcements

- Open up S3 location of hand ins:
  - Give access to your S3 bucket to:
    - public
    - onlinecloudcomputingcourse@gmail.com
  - You could lose credit or be penalized otherwise
  - See Piazza Post on how to open up your handin directory
- Encounter a general bug:
  - Post on Piazza
- Encounter a grading bug:
  - Post Privately on Piazza
- Post feedback on OLI

Project 4 Student Progress

- Part b: Input Text Predictor: N-gram Generation
  - 97% Students Completed
- Stats:
  - Total n-grams generated from the Gutenberg Dataset :
    - Approximately 477 million
  - Fastest Computation
    - 16 minutes 48 seconds
    - 19 c1.xlarge @ $0.07 spot price
    - Cluster cost: $1.3 per hour
  - Slowest Computation
    - 4 m1.small (with 1000 reducers!)
    - 8 hours and 25 minutes

More MapReduce Tips

- Watch out for Whirr bugs
  - Failure to launch instances
    - Check AWS Management Console to verify
  - Failure to install and configure Hadoop correctly
    - Run **sudo jps** on Master node to verify that the Hadoop processes are running correctly. Test using example jobs or small data first.
  - Using different instance types for master and slave nodes may provision them in different zones
  - 32 bit AMIs will not work for larger instance types (m1.large – etc. need 64 bit)

New Modules

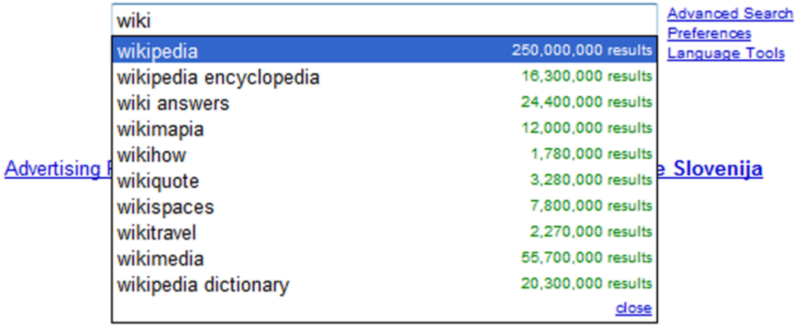
- Unit 5 – Distributed Programming and Analytics Engines for the Cloud
  - Introduction to Distributed Programming for the Cloud
  - Distributed Analytics Engines for the Cloud: MapReduce
  - Distributed Analytics Engines for the Cloud: **Pregel**
    - Pregel
    - The Computation and Architectural Models
    - The Data Structure and Storage
    - The Graph Flow and API
    - Architectural Model and Workflow
    - Fault Tolerance

Project 4, Part c

- Project 4, Part a
  - MapReduce
  - Project 4 Survey
- Project 4, Part b
  - Input Text Predictor: NGram Generation
- Project 4, Part c
  - Input Text Predictor: Language Model and User Interface

Recap Input Text Prediction

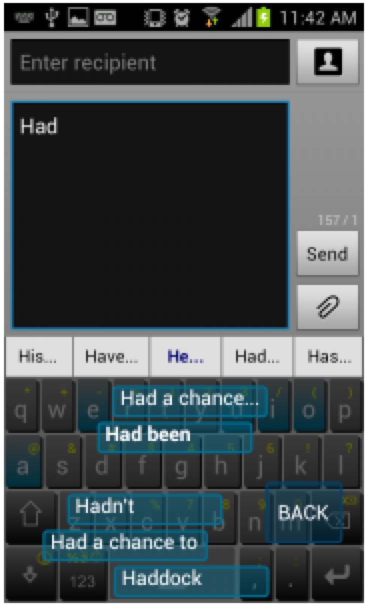
- Construct an Input Text Predictor



wiki

wikipedia	250,000,000 results
wikipedia encyclopedia	16,300,000 results
wiki answers	24,400,000 results
wikimapia	12,000,000 results
wikihow	1,780,000 results
wikiquote	3,280,000 results
wikispaces	7,800,000 results
wikitravel	2,270,000 results
wikimedia	55,700,000 results
wikipedia dictionary	20,300,000 results

Google Suggest



Enter recipient

Had

WordLogic iKnowU keyboard

How to Construct an Input Text Predictor?

1. ~~Given a language corpus~~
   - Project Gutenberg (2.5GB, already on S3)
   - English Language Wikipedia Articles (30GB, on S3 soon)
2. ~~Construct an n-gram model of the corpus~~
   - An n-gram is a phrase with n words.
   - For example a set of 1,2,3,4,5-grams with counts:

this	1000
this is	500
this is a	125
this is a blue	60
this is a blue house	20

How to Construct an Input Text Predictor?

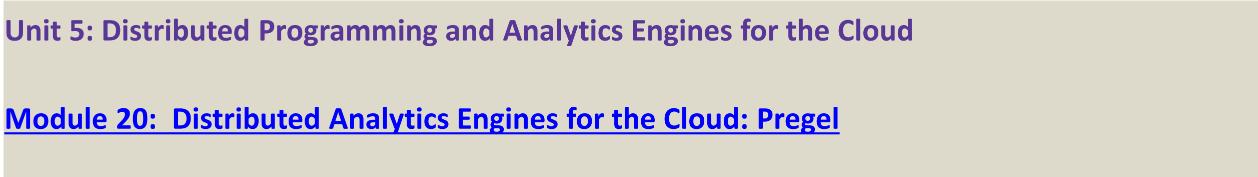
3. Build a statistical language model that contains the probability of a word appearing after a phrase
    - $\Pr(is|this) = \frac{Count(this\ is)}{Count(this)} = \frac{500}{1000} = 0.5$
    - $\Pr(a|this\ is) = \frac{Count(this\ is\ a)}{Count(this\ is)} = \frac{125}{500} = 0.25$
4. Store and index the words and their probabilities to use in an application

Discussions

- Your questions…

Upcoming Deadlines

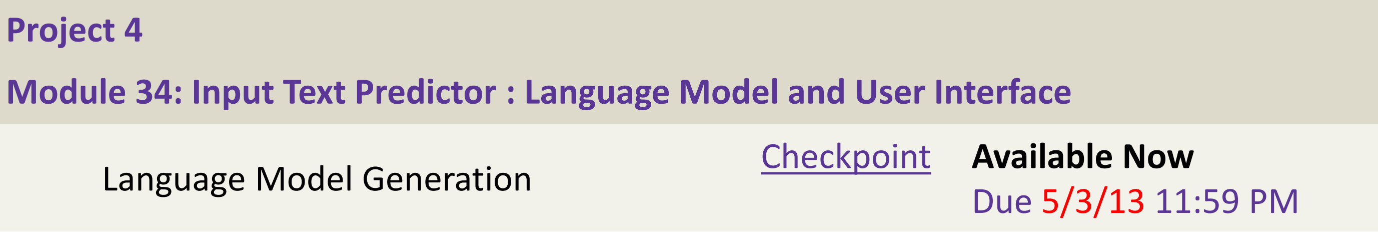
- Unit 5:



Unit 5: Distributed Programming and Analytics Engines for the Cloud

Module 20: Distributed Analytics Engines for the Cloud: Pregel

- Project 4



Project 4

Module 34: Input Text Predictor : Language Model and User Interface

Language Model Generation	Checkpoint	**Available Now**
Due 5/3/13 11:59 PM