CS565: Intelligent Systems and Interfaces

General Introduction

Semester: Jan – May 2017

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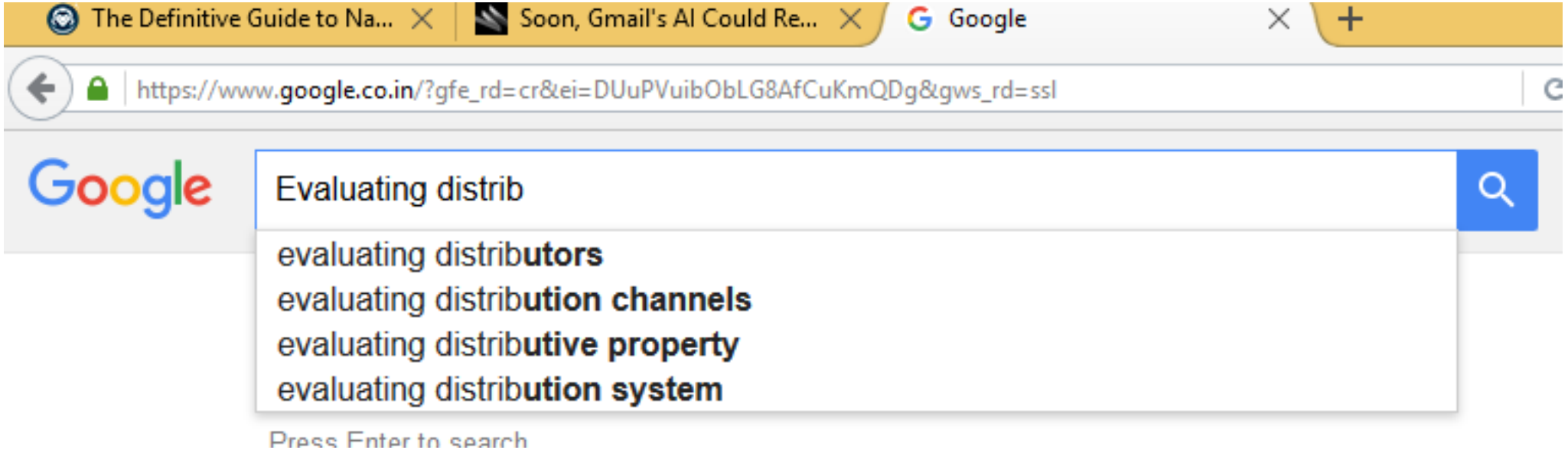
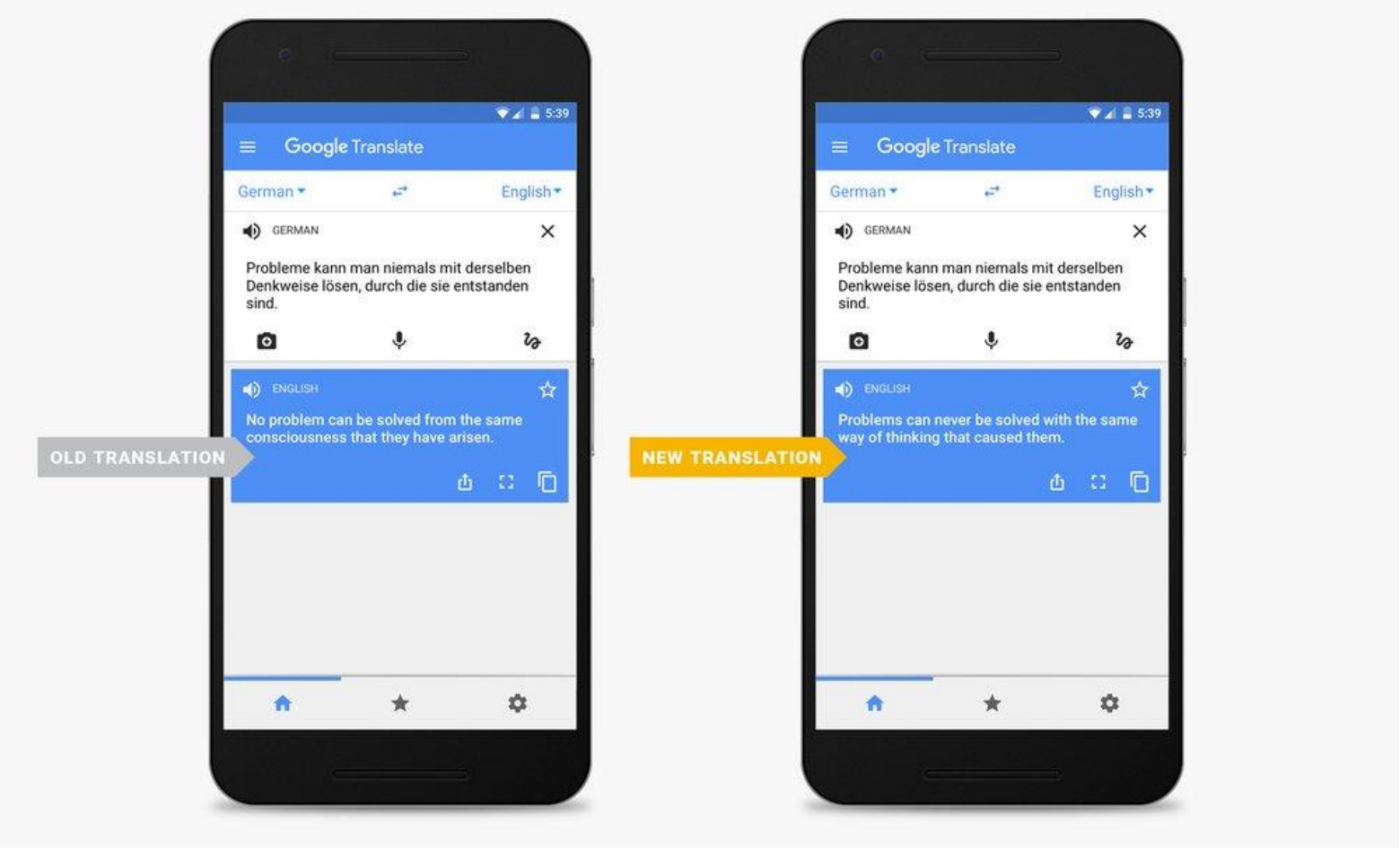
What we are going to study in this course?

- Some stuffs on NLP focused on very specific aspects of NLP and their interface with ML in general, probabilistic modeling and neural nets in particular.
- Will become clearer as we progress

Do we see NLP in our daily life?

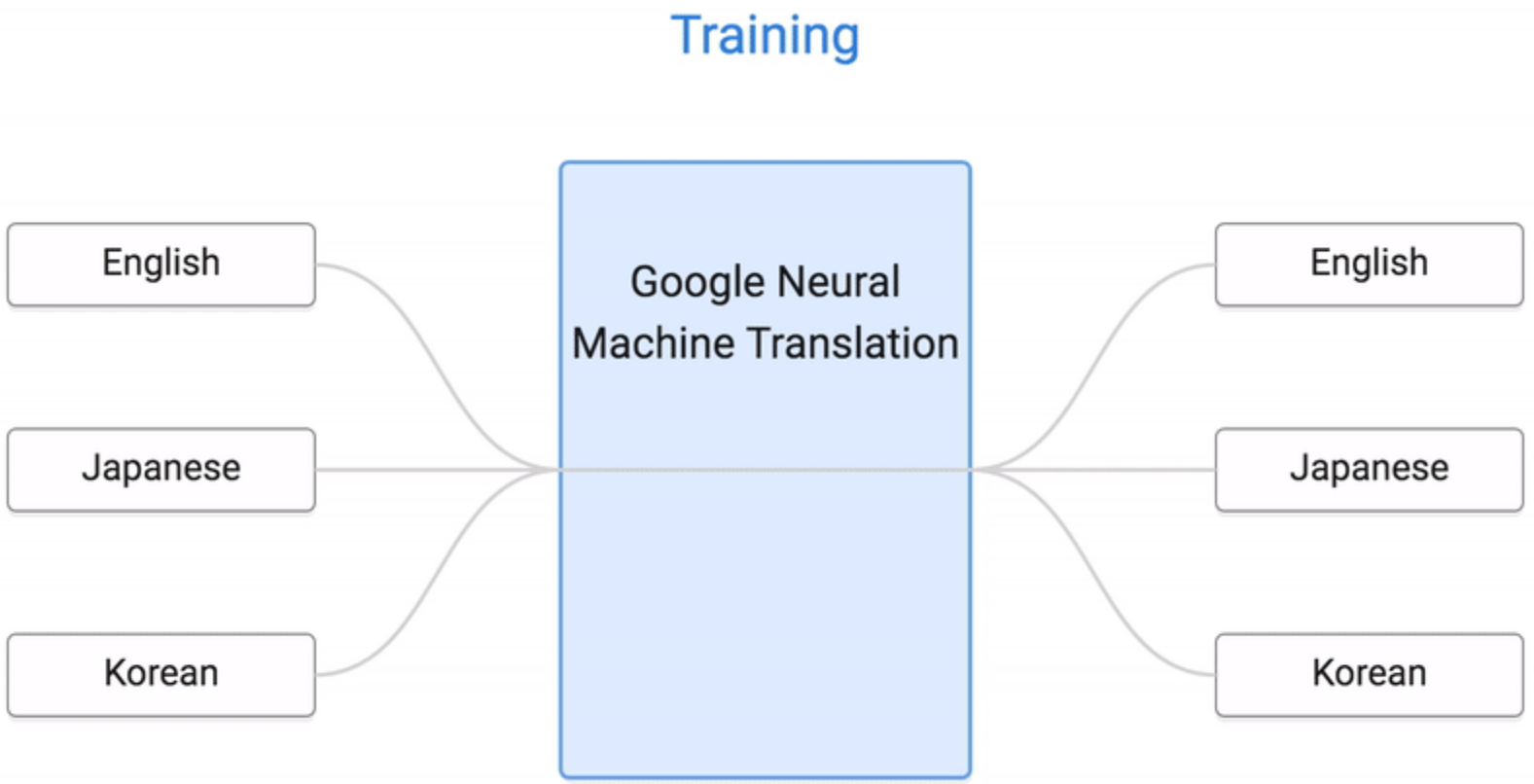


Machine Translation



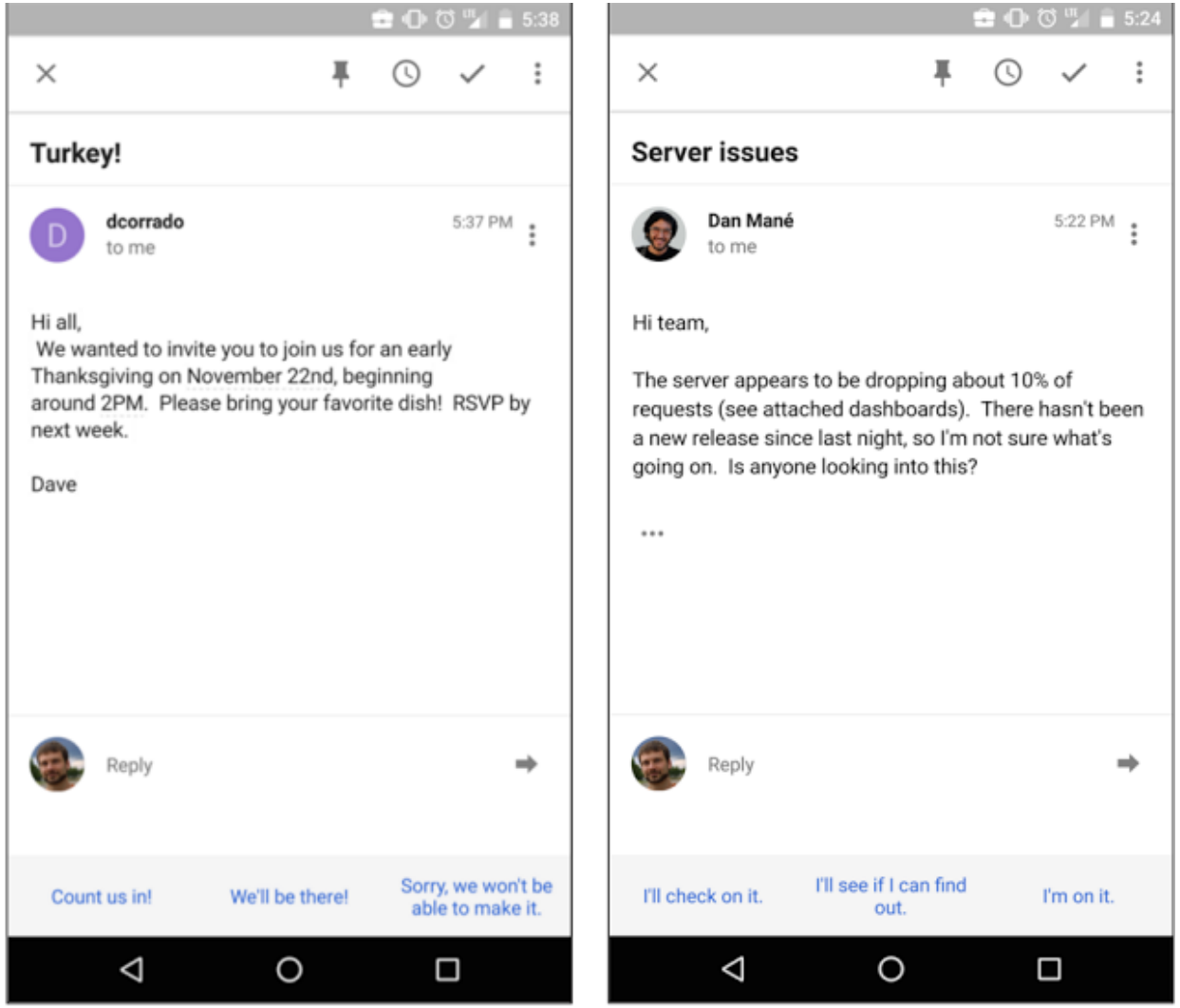
Source: https://blog.google/products/translate/found-translation-more-accurate-fluent-sentences-google-translate/

Machine Translation



Source: https://research.googleblog.com/2016/11/zero-shot-translation-with-googles.html

Suggestions for short email response



Source: http://googleresearch.blogspot.in/2015/11/computer-respond-to-this-email.html

Some Applications

- Machine Translation
- Automatic Summarization
- Question-Answering System
- Paraphrase detection
- Sentiment Analysis
- Text Classification
- Conversational Agents
- Many many more …..

Motivation to study the course

Lets discuss mine; you show your motivation in Project

Biomedical Text Mining: Semantic graph construction

HISTORY OF PRESENT ILLNESS :

The patient is a 58 year old right hand dominant white male with a long history of hypertension , changed his medications from Aldomet to Clonidine six weeks ago . The patient has a history of adult onset diabetes mellitus , ankylosing spondylitis , status post myocardial infarction in '96 (?) now with acute onset of left face and arm greater than leg hemiplegia and primary hemisensory loss on the left . His voice became slurred and he had a mild central dull headache .He was unable to move the left side of his body and felt numb on that side .

He was taken to Wayskemedcalltown Talmi and transferred to Heaonboburg Linpack Grant Medical Center with a computerized tomography scan showing a 1x2 thalamic capsular hemorrhage without superficial mass effect .

MEDICATIONS ON ADMISSION :

Vasotec 40 mg q.day , Soma 1 tablet q.day , Demerolprn , Clonidine .

ALLERGIES :

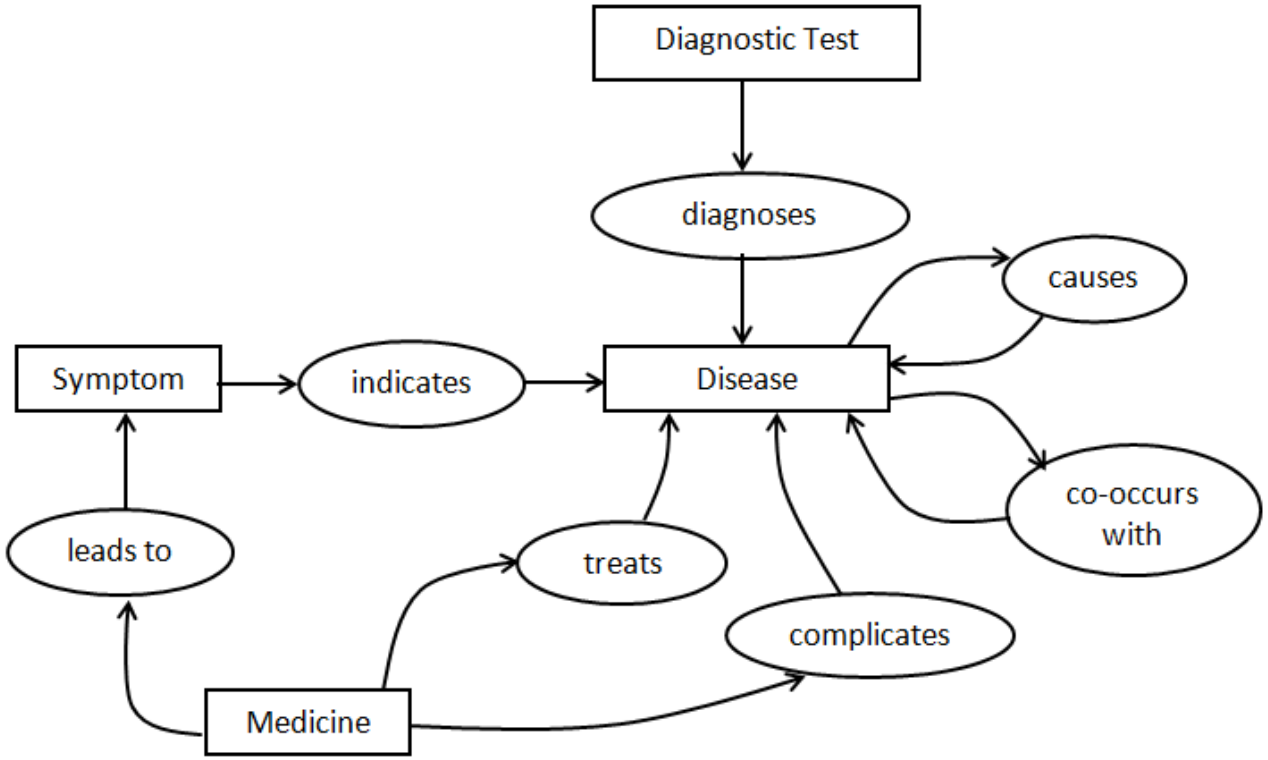
The patient has no known drug allergies .

FAMILY HISTORY : positive for diabetes mellitus , positive for cancer .

DISEASE **MEDICINE & DOSAGE**

DIAGNOSTIC TEST & RESULTS **SYMPTOMS**

Semantic graph construction



Semantic graphs in general domain

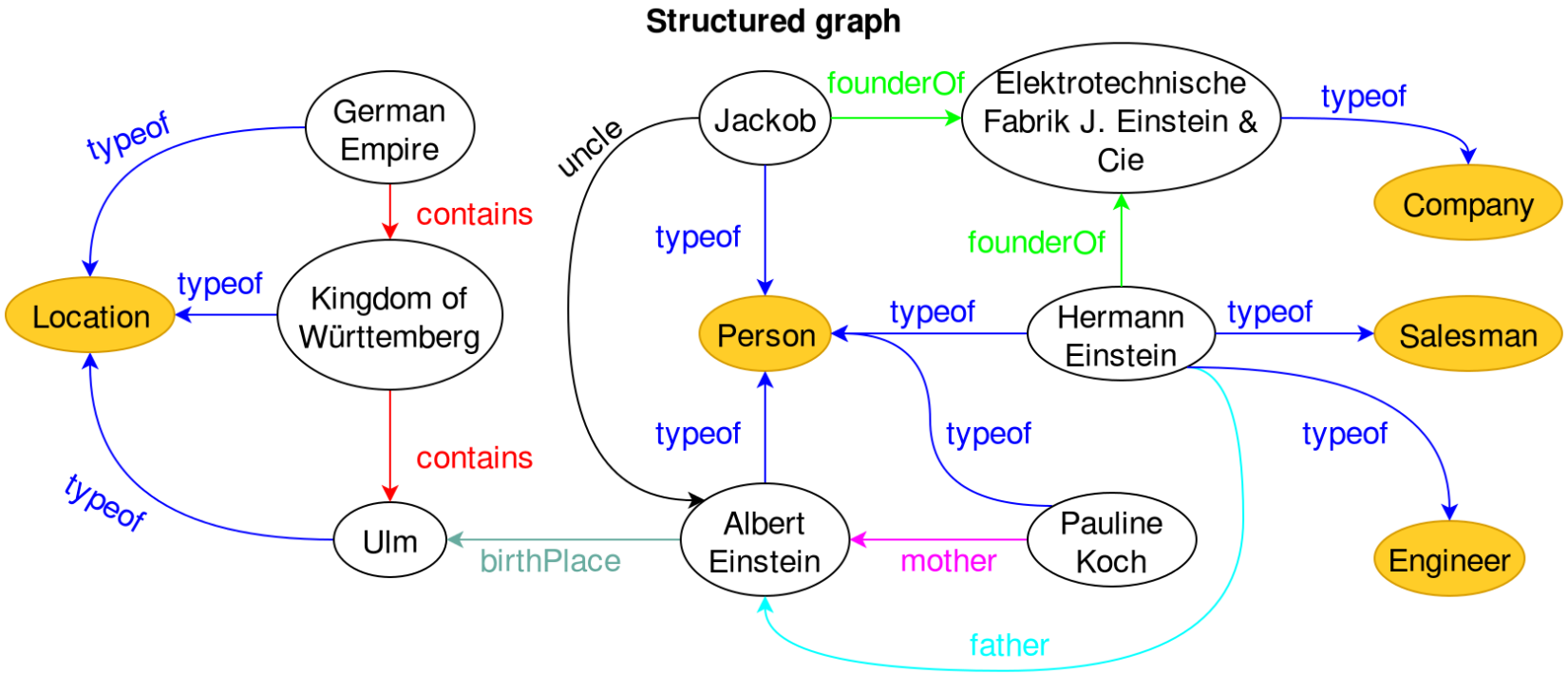


Figure courtesy: Abhishek, Research Scholar, Dept of CSE

Administrative Stuff

Schedule and Marks Distribution

- Class Schedule
  - Tue [5-6pm], Wed [4-5pm], Thu [3-4pm]: E1 Slot
  - Keep your Friday E1 slot [2-3pm] Free

- Marks Distribution
  - Assignments [Two Assignments expected] [~10%]
  - Project [~60%]
  - Exams [~10+20=30% max]

TAs

Abhishek

Aparajita

Saptarshi

Sunil

Assignments and Project

- 2 Assignments within 10th – 15th Feb
- A group of 4 students
- Decide and submit group details by 20th Jan
- Same group for assignment and project
- In each submission of assignment, contribution of individual students need to be explicitly mentioned
- Certain project themes will be posted around 20th Jan
- Project topic proposal submission deadline [tentative]: 25th Feb
- Project mid-term evaluation and report submission [tentative]: 15th – 20th Mar

Resources: Books

- No Text Book

- Reference Books
  - Speech and Language Processing: Jurafsky and Martin [https://web.stanford.edu/~jurafsky/slp3/]
  - Foundations of Statistical Natural Language Processing: Manning and Schutze [http://nlp.stanford.edu/fsnlp/]
  - Neural Networks and Learning Machines: Haykin

Resources: Online courses

- http://web.stanford.edu/class/cs224n/
- http://cs224d.stanford.edu/syllabus.html [Deep Learning for NLP]
- http://web.stanford.edu/class/cs224u/ [Natural language Understanding]
- http://www.cs.columbia.edu/~mcollins/notes-spring2013.html
- http://www.cs.columbia.edu/~cs4705/
- http://www.cse.iitd.ac.in/~mausam/courses/csl772/autumn2014/

Resources: Online relevant materials

- NLTK basic : http://www.nltk.org/book/
- Python Numpy Tutorial : http://cs231n.github.io/python-numpy-tutorial/
- Deep Learning Tools/Library such as Tensor-Flow, Theano etc.
- More will be added due progress of the course.
- Very soon, course website/Canvas/Piazza will be online.