

Artificial Intelligence For NLP

人工智能与自然语言处理课程组

2018.Nov. 04

Outline

- i. Course Background
- ii. AI Introduction;
- iii. Automata And Syntax Tree;
- iv. Assignment

1/5 Background

Why does this course exist?

Three Stories:

- 1. 2016 Alibaba Group & Ant Financial.
- 2. My girl friend and sister are looking for a job.
- 3. The good result of the last term.

Three problems we want to solve

- 1. Confidence
- 2. Capacity
- 3. Continuation

Three problems we want to solve

- 1. Confidence
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Three problems we want to solve

- 1. Capacity: The solid and systematic background.



The farther backward you can look, the farther forward you are likely to see.

(Winston Churchill)

Three problems we want to solve

- 2. Confidence: A job is the least requirement of a promising man.



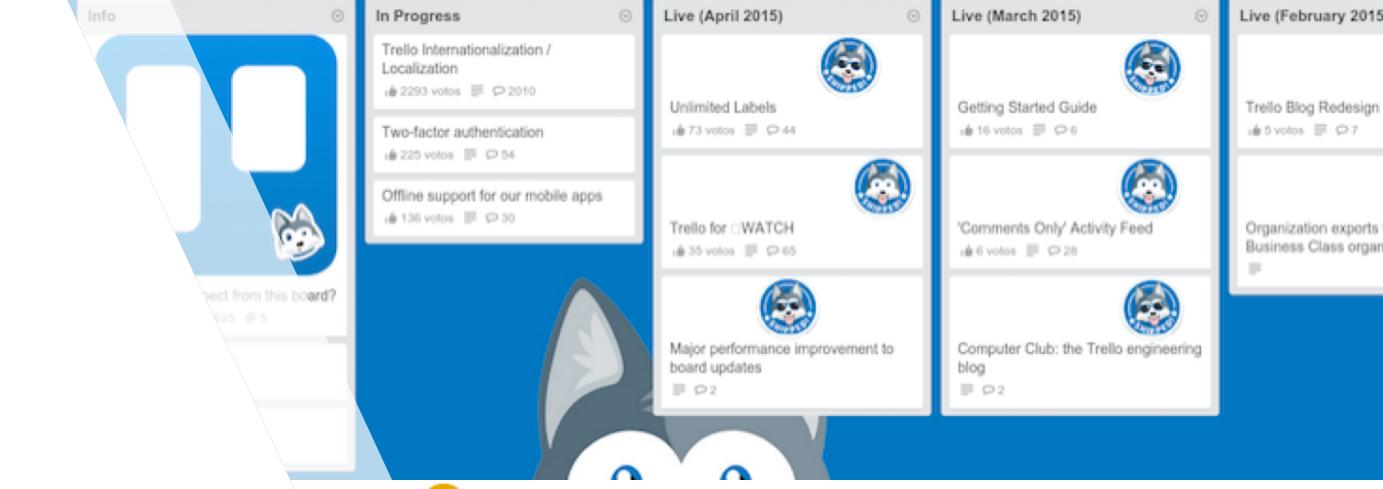
Three problems we want to solve

- 3. Continuation :
Keep learning and
solve the future
unknow problem.



What does our course contain?

- 1 Kernel Course *Artificial Intelligence for NLP*
- 2 Out Source Courses: *Computer Programming Design, Analysis and Design of Algorithm*
- 3 Platforms to collaborate: github, trello, slack



TA and QA system

- 1. Post your question in trello
 - 2. Talk project or programming problems in slack
 - 3. Email your problem to me.
-
- TA:
 - Zhouhan, Zju, Master of Computer Science
 - Zhangnan, Whu, Master of Computer Science



2/5 AI Introduction

What AI Solved?

- Sources:
 - <https://www.youtube.com/watch?v=vjSohj-lclc>
 - 大众点评 搜索海底捞 选择一家 拨打电话
 - Question: How many *AI methods they using. (split room and talking)*

Question

- Classify the applications or system based dimensions.

- [] Auto Composition
- [] Voice Recognition
- [] Stock Prediction
- [] Service Robot
- [] Anti Money Laundering



And, can you figure out some more?



AI Paradigm

- 1. Rule Based
- 2. Search Based
- 3. Mathematical or Analytic Based
- 4. Probability Based
- 5. Machine Learning (deep learning) Based

1. Rule Based

simple_grammar = "'''"

sentence => noun phrase verb_phrase noun_phrase => Article Adj* noun

Adj* => null | Adj Adj*

verb_phrase => verb noun_phrase

Article => 一个 | 这个

noun => 女人 | 篮球 | 桌子 | 小猫

verb => 看着 | 坐在 | 听着 | 看见

Adj => 蓝色的 | 好看的 | 小小的

''''"

Abstract this problem:

- In the simplest case, choose one of those at random
- In some cases, when the symbol has rewrites, we will pick one that is a list of symbols, and try to generate from that.

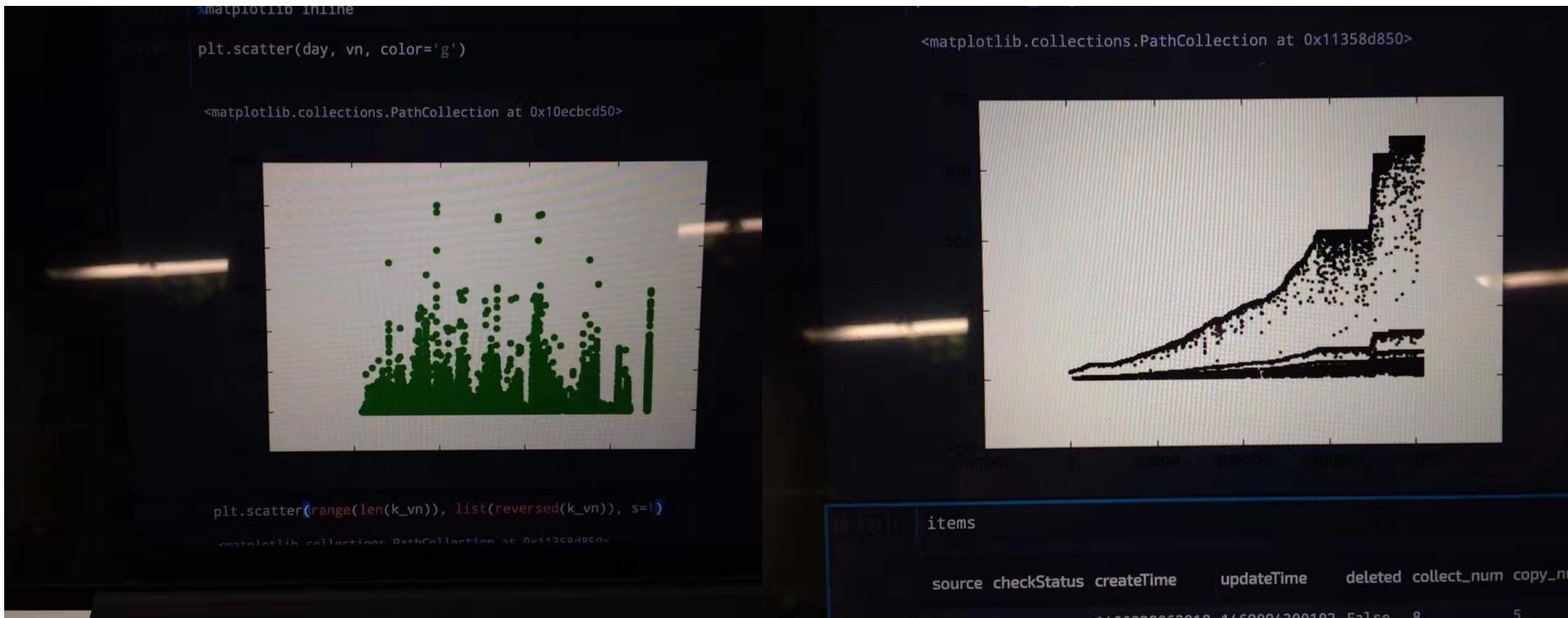
2. Search Based

1. Map Application
2. Decision System
3. Expert System

Online Programming



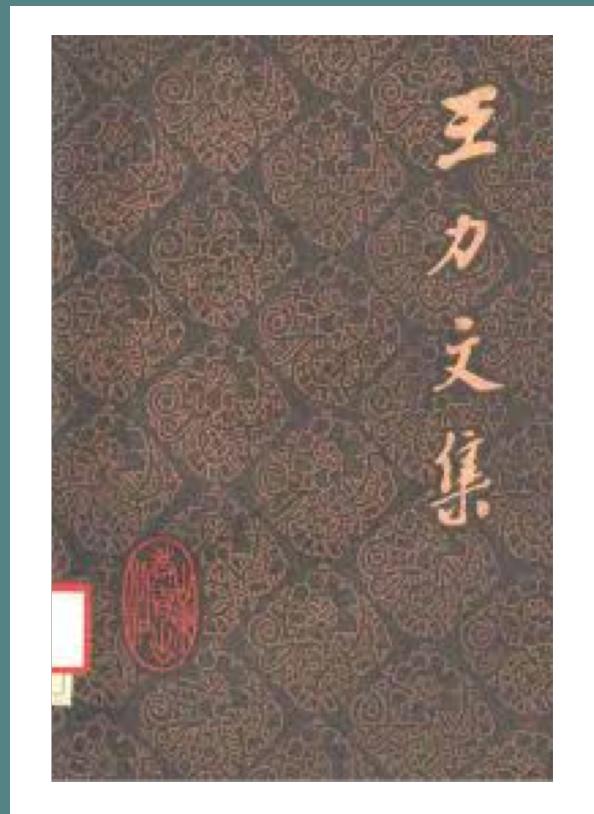
3. Mathematical or Analytic Based



4. Probability Based

- A1. 前天早上吃晚饭的时候
- A2. 前天早上吃早饭的时候
- B1. 正是一个好看的小猫
- B2. 真实一个好看的小猫
- C1. 我无言以对，简直
- C2. 我简直无言以对

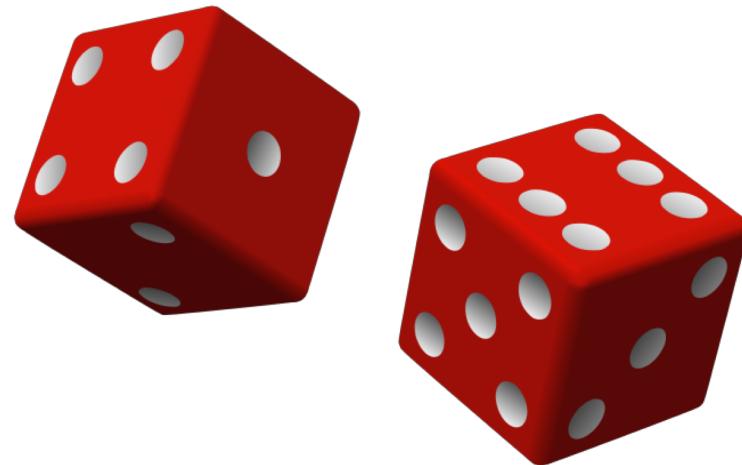
名称	定义	语法特点	类别	举例
(一) 名词	表示人或事物名称的词	①前面可以加数量词(一副对联) ②前面不能加不、很之类的副词(不能很联、很对联)。 ③后面不能加状态助词“了”(楹联了)	①具体名词 ②抽象名词	人、牛、山、水、对联 友谊、立场、观点、思想
(附) 方位词	名词中表示方向位置的词	常用在名词或名调性短语的后面		东、西、南、北、前、后、中间、下边
(二) 代词	具有替代或指示作用的词分	①能够替代或指示替代或各类实词。 ②一般不带修饰成分。	①人称代词 ②指示代词 ③疑问代词	我、你、他、我们、你们 这、那、这里、那边 谁、什么、哪、多少
		①前面可以加副词(刚走、很想)。	①不及物动词	醒、病、游行、觉悟



4. Probability Based

- "Every time I fire a linguist, the performance of the speech recognizer goes up"

----- Frederick Jelinek (18 November 1932 – 14 September 2010)



5. Machine Learning (deep learning) Based

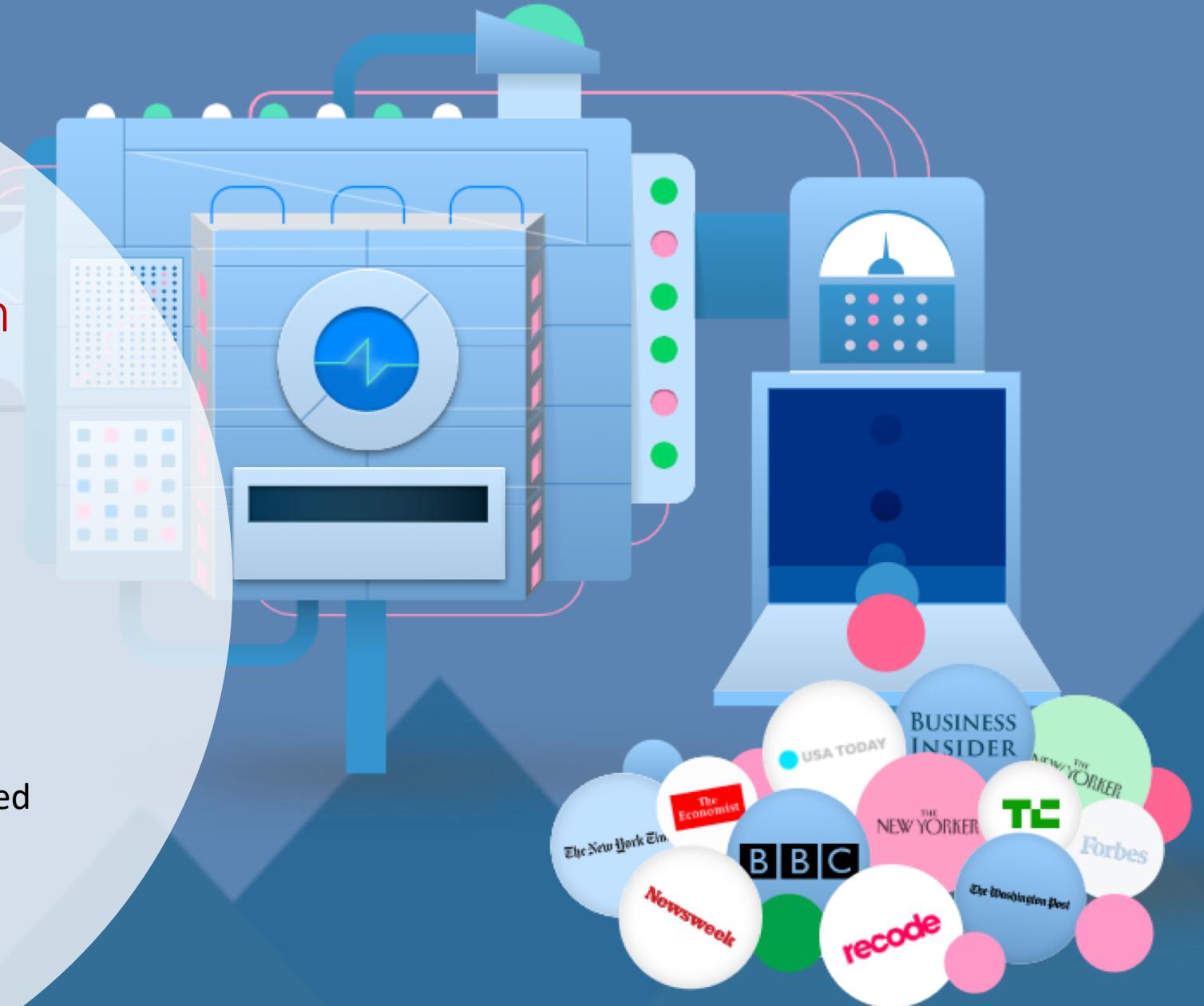
6. Plus. Logic Reasoning System

- Talk: Come up with a *new* scenario with AI methods.



AI Paradigm & Data Driven

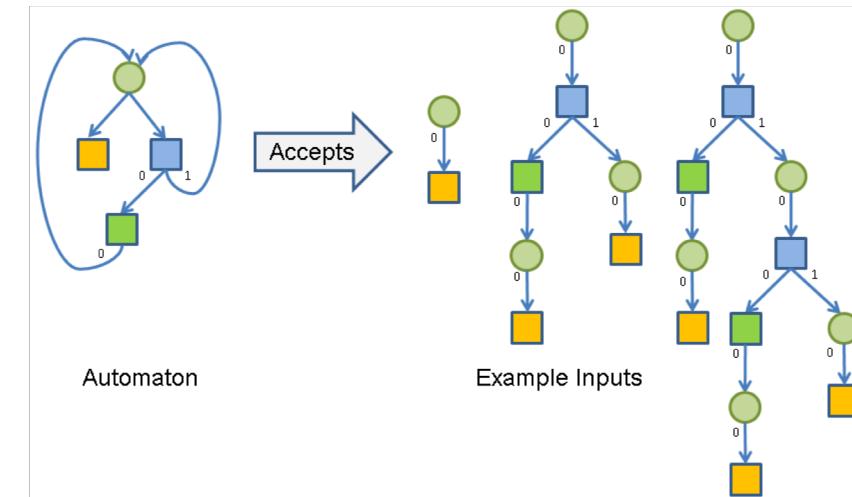
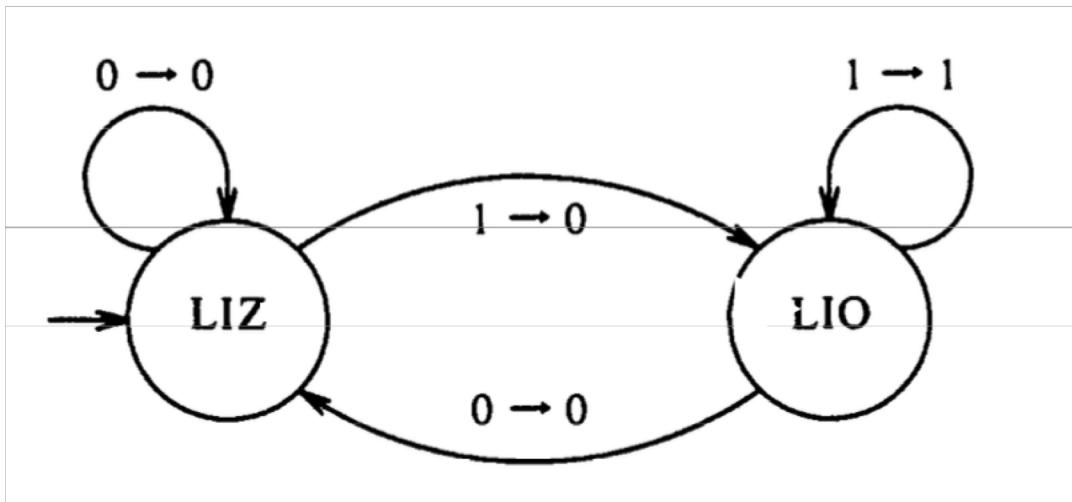
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3/5 Automata And Syntax Tree

Automata

- Input: 011010111
- Output: 001000011



- LIZ: Last Input Zero, LIO: Last Input One

4/5 Assignment

- As the requirement reading the paper
 - Set up the python data intelligent environment
 - Try to pull and merge request to github group.
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- Net course:
 - Syntax Tree Parser
 - Search Problem start

5/5 Q&A