论文写作的易读性原则

案例分析：基于Seq2Seq的对话数据增广

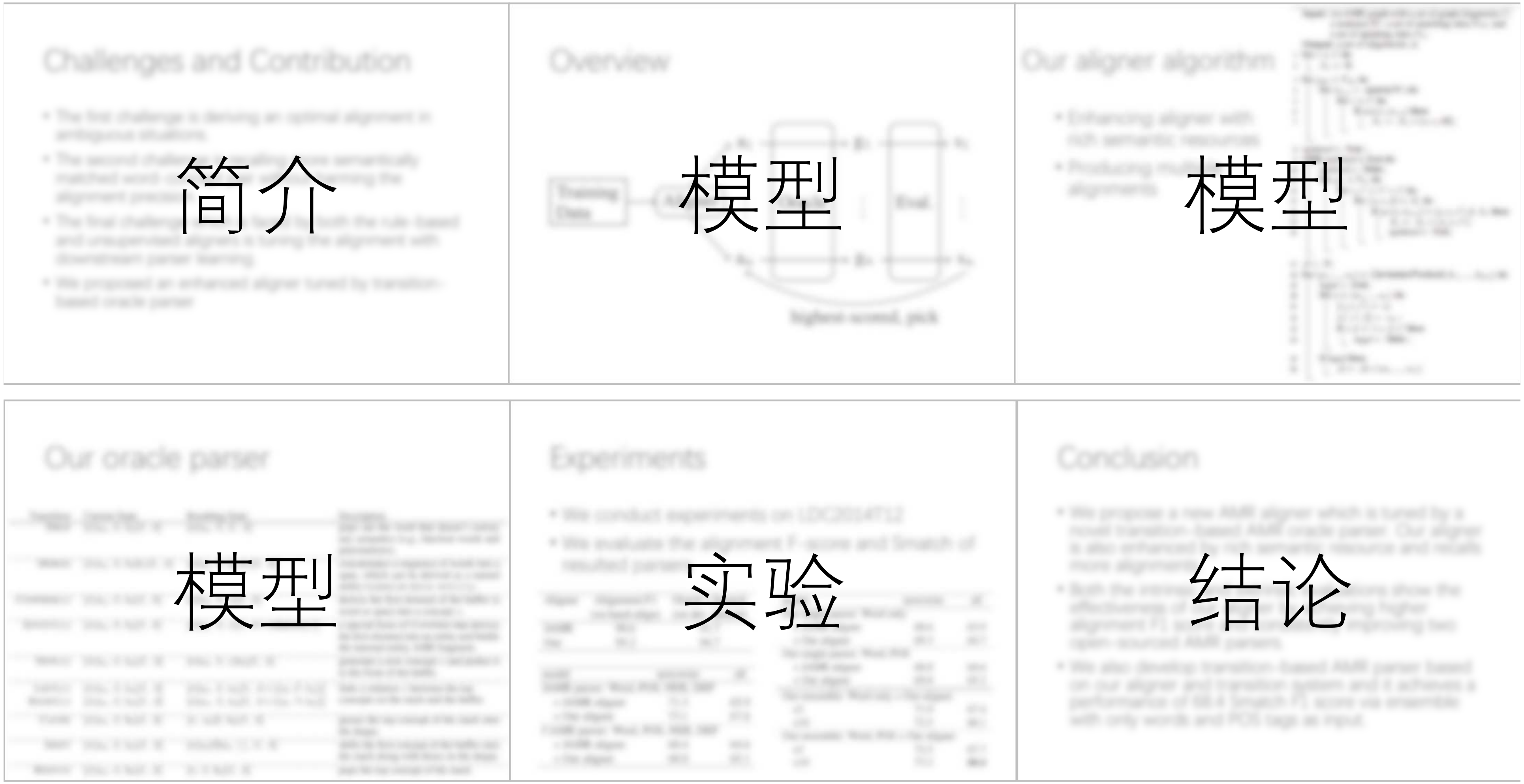
报告人：刘一佳
合作者：侯宇泰、车万翔、刘挺

http://yjliu.net/cv/res/2018-08-19-nlpcc-sws.compressed.pdf

学术报告中的一些设计技巧

报告人：刘一佳
导师：秦兵、车万翔

错误地利用
报告与论文结构的相似性



思考题

- 为什么做学术报告
  - 为了更好地交流

- 做怎样的学术报告
  - ☐"向听众展示我对问题的深入理解"
  - ☐"让听众明白我的论文中的技术"
  - ☐"引起听众的兴趣"

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听众模型

理想中的听众

- 领域专家
- 已经读过你的论文
- 对于你的工作非常感兴趣

现实中的听众

- 来自其他领域
- 刚刚了解到你的工作
- 这个时段没什么可听的，恰巧发现这屋子网络比较好

类比审稿人模型

审稿

你以为审稿人应该是这样审稿的：

> 审稿人一定是专家，无所不知。打印出来，仔细研读揣摩数天，对于看不懂的地方反复推敲。即使你的英文写得极其糟糕、即使你的文章组织很混乱、即使你的表述很难看懂，审稿人花费了大量的时间后终于看懂了，他认为你的工作是有意义的，决定给你个border line或以上的分数。

审稿人实际上往往是这样审稿的：

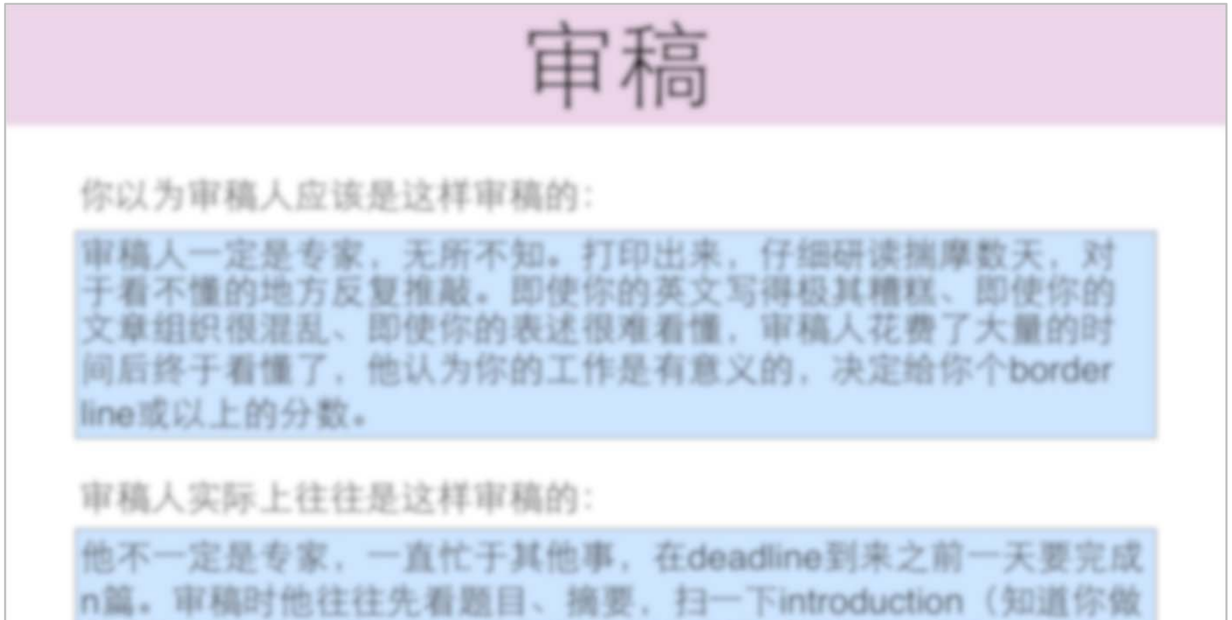
> 他不一定是专家，一直忙于其他事，在deadline到来之前一天要完成n篇。审稿时他往往先看题目、摘要，扫一下introduction（知道你做什么），然后直接翻到最后找核心实验结果（做得好不好），然后基本确定录还是不录（也许只用5分钟！）。如果决定录，剩下就是写些赞美的话，指出些次要的小毛病。如果决定拒，下面的过程就是细看中间部分找理由拒了。

第一印象定录拒，5分钟内打动审稿人

12

刘洋. 2014. 机器翻译学术论文写作方法与技巧

类比审稿人模型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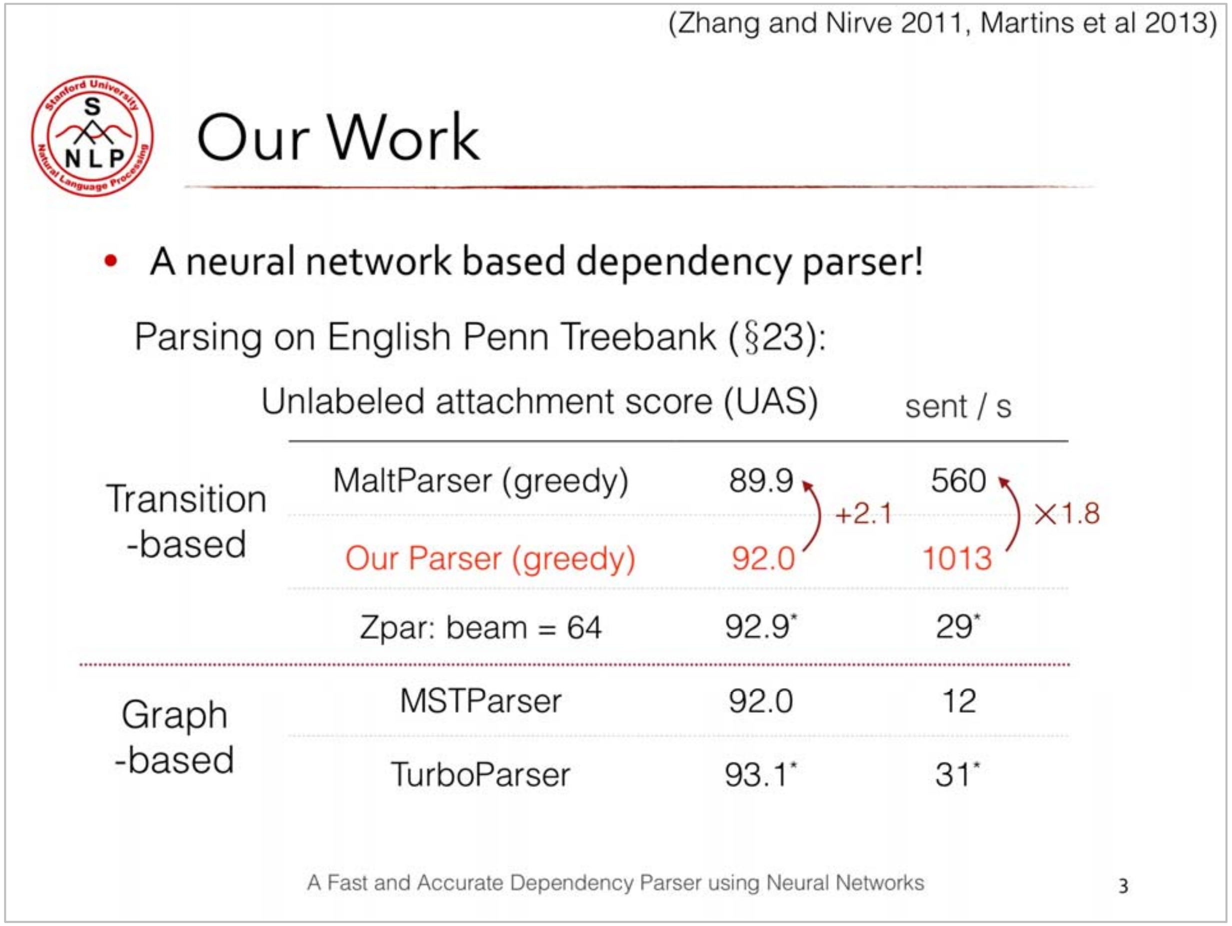
"You have **two minutes** to engage your audience before they start to doze." -- Simon Peyton Jones in *How to give a great research talk*

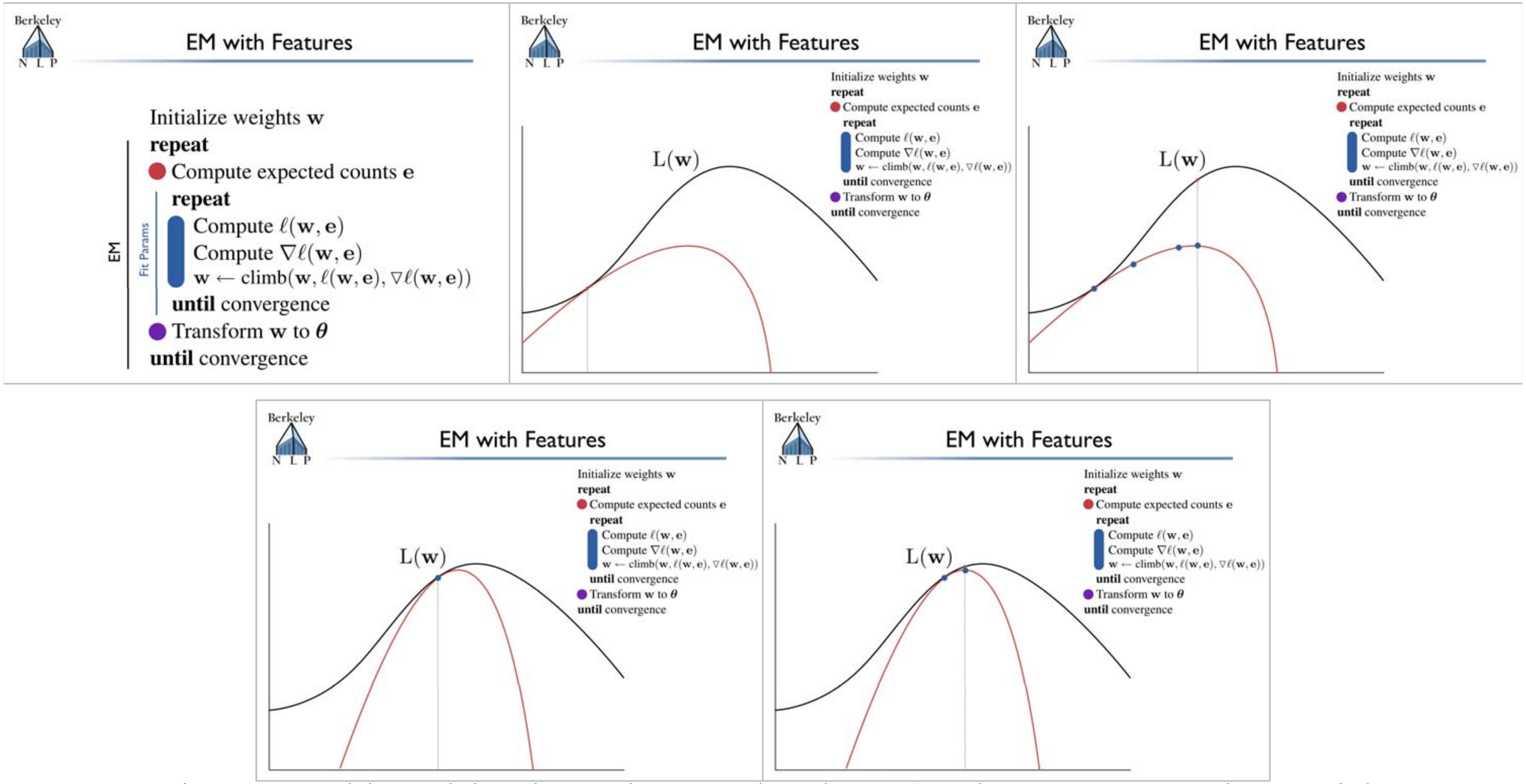
刘洋. 2014. 机器翻译学术论文写作方法与技巧

简介部分：展示最好的部分



Danqi Chen and Christopher Manning. 2014. A Fast and Accurate Dependency Parser using Neural Networks，第三页

模型部分：多用例子



Taylor Berg-Kirkpatrick, Alexandre Bouchard-Côté, John DeNero, and Dan Klein. 2010. Painless Unsupervised Learning with Features，第28到54页

模型部分：反例

Transition	Current State	Resulting State	Description
DROP	$[\sigma\|\mathrm{s}_0,\ \delta,\ b_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ \beta,\ A]$	pops out the word that doesn't convey any semantics (e.g., function words and punctuations).
MERGE	$[\sigma\|\mathrm{s}_0,\ \delta,\ b_0\|b_1\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ b_0\_b_1\|\beta,\ A]$	concatenates a sequence of words into a span, which can be derived as a named entity (`name`) or `date-entity`.
CONFIRM(c)	$[\sigma\|\mathrm{s}_0,\ \delta,\ b_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{c}\|\beta,\ A]$	derives the first element of the buffer (a word or span) into a concept `c`.
ENTITY(c)	$[\sigma\|\mathrm{s}_0,\ \delta,\ b_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{c}\|\beta,\ A \cup \mathrm{relations}(c)]$	a special form of CONFIRM that derives the first element into an entity and builds the internal entity AMR fragment.
NEW(c)	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{c}\|\mathrm{b}_0\|\beta,\ A]$	generates a new concept `c` and pushes it to the front of the buffer.
LEFT(r) RIGHT(r)	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$ $[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A \cup \{\mathrm{s}_0 \xleftarrow{\mathrm{r}} \mathrm{b}_0\}]$ $[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A \cup \{\mathrm{s}_0 \xrightarrow{\mathrm{r}} \mathrm{b}_0\}]$	links a relation `r` between the top concepts on the stack and the buffer.
CACHE	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	$[\sigma,\ \mathrm{s}_0\|\delta,\ \mathrm{b}_0\|\beta,\ A]$	passes the top concept of the stack onto the deque.
SHIFT	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	$[\sigma\|\mathrm{s}_0\|\delta\|\mathrm{b}_0,\ [\,],\ \beta,\ A]$	shifts the first concept of the buffer onto the stack along with those on the deque.
REDUCE	$[\sigma\|\mathrm{s}_0,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	$[\sigma,\ \delta,\ \mathrm{b}_0\|\beta,\ A]$	pops the top concept of the stack.

实验部分： 图比表格好

LDC2014T12 Experiments

- alignment F-score

Aligner	Alignment F1 (on hand-align)	Oracle's Smatch (on dev. dataset)
JAMR	90.6	91.7
Our	95.2	94.7

- parser improvements

model	newswire	all
JAMR parser: Word, POS, NER, DEP		
+ JAMR aligner	71.3	65.9
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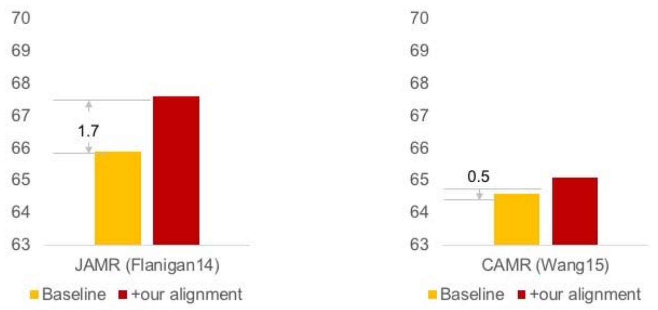
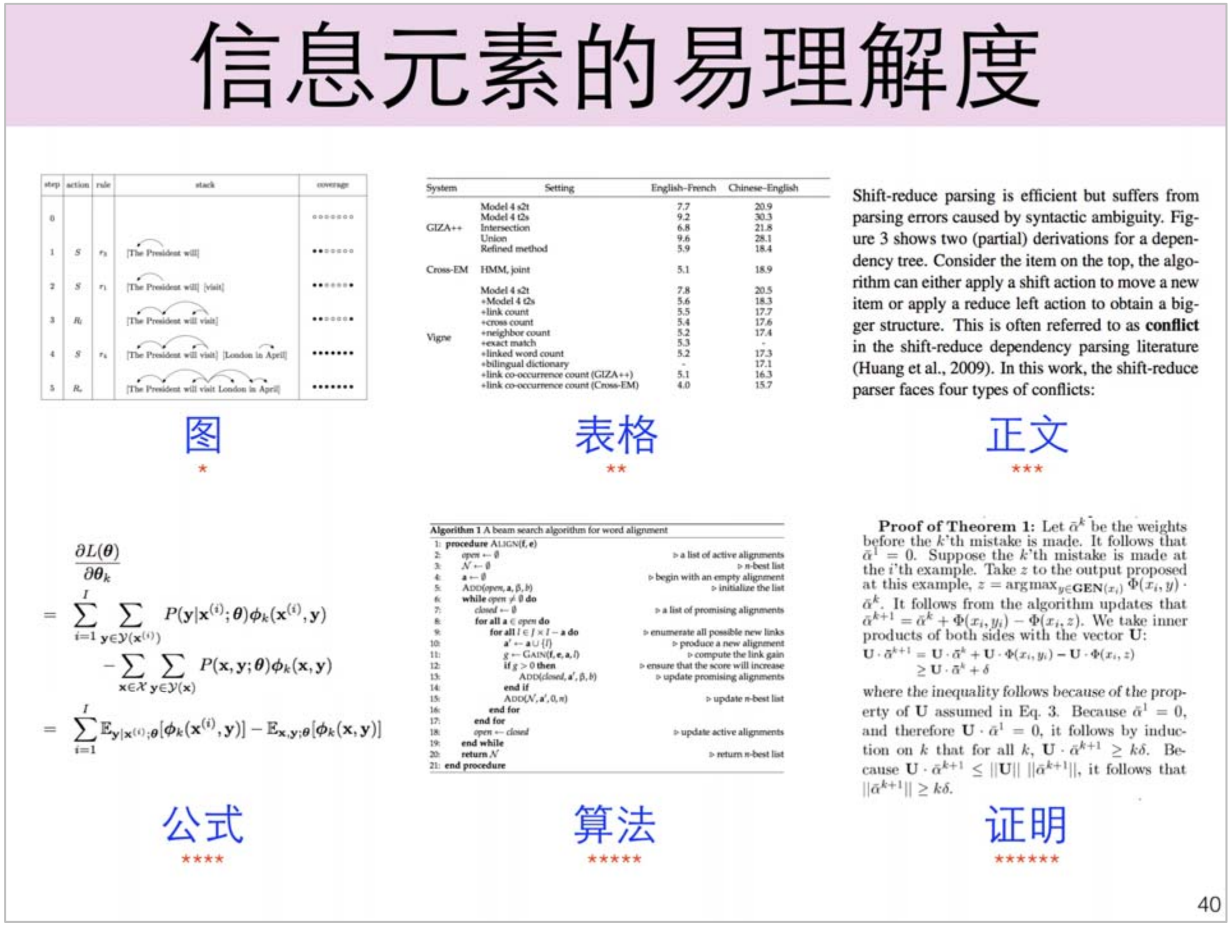
Aligner Experiments:
Two Open-sourced AMR Parsers



实验部分：图比表格好



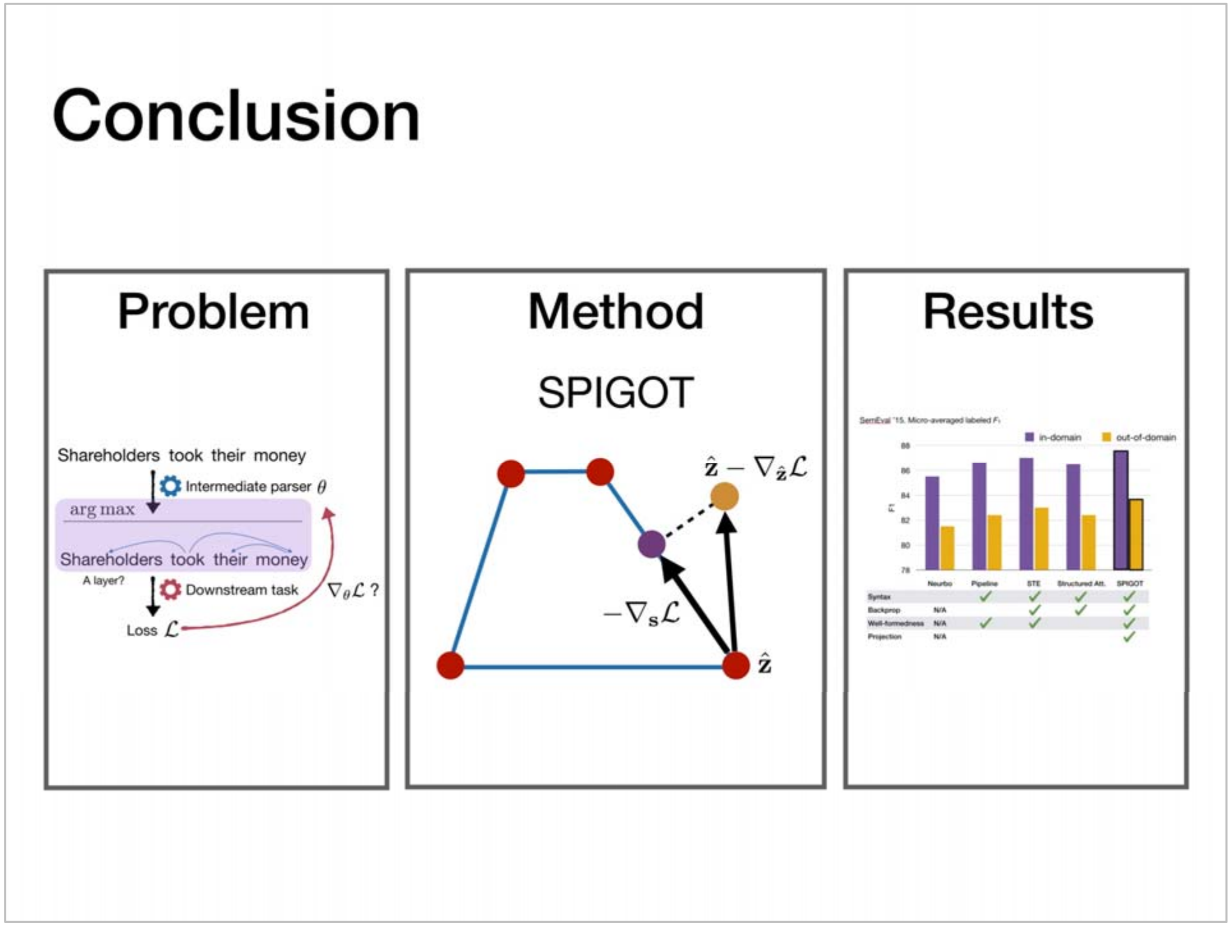
刘洋. 2014. 机器翻译学术论文写作方法与技巧

实验部分：图比表格好

用图与例子来描述方法和实验

刘洋. 2014. 机器翻译学术论文写作方法与技巧

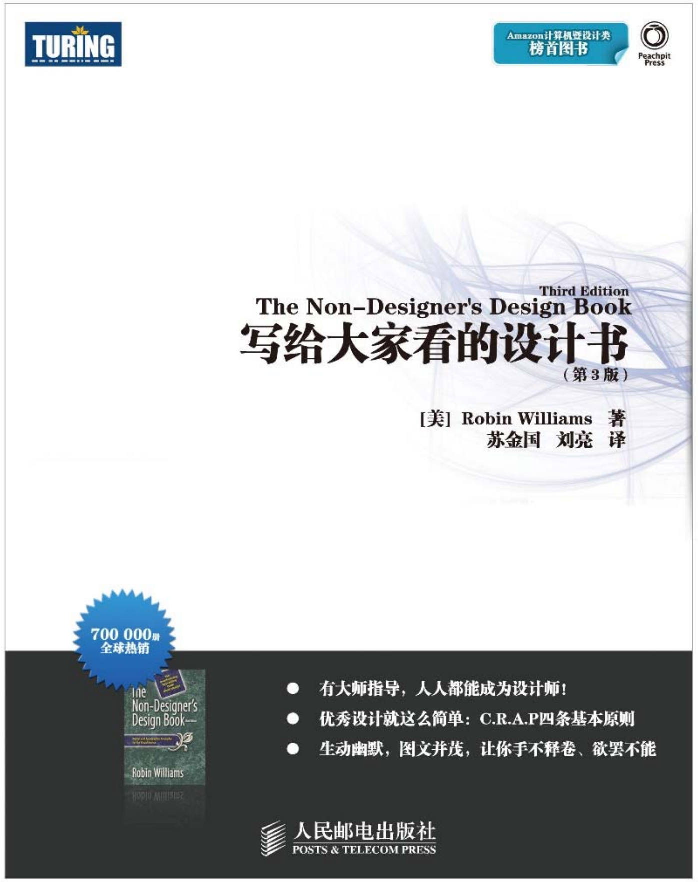
结论部分： 新的展现形式



Hao Peng, Sam Thomson, and Noah A. Smith. 2018. Backpropagating through Structured Argmax using a SPIGOT，最后一页

设计原则

- 亲密性：相关的元素应该组织到一起
- 重复：相同的内容达到形式的统一
- 对比：如果两项不完全相同，就应使之截然不同
- 对齐：使元素之间产生关联，有关联的都应对齐



根据设计原则做幻灯片

Challenges and Contribution
• The first challenge is deriving an optimal alignment in ambiguous situations.
• The second challenge is recalling more semantically matched word-concept pair without harming the alignment precision.
• The final challenge which is faced by both the rule-based and unsupervised aligners is tuning the alignment with downstream parser learning.
• We proposed an enhanced aligner tuned by transition-based oracle parser
加入空行提高相关元素的亲密性
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相同内容使用相同样式即提高了一致性又形成了必要的对比
Challenges and Contribution
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• deriving an optimal alignment in ambiguous situations.
• recalling more semantically matched word-concept pair without harming the alignment precision.
• tuning the alignment with downstream parser learning.
• Contribution
• an enhanced aligner tuned by transition-based oracle parser

避免不对齐

Our aligner algorithm

- Enhancing aligner with rich semantic resources
- Producing multiple alignments

Input: An AMR graph with a set of graph fragments C; a sentence W; a set of matching rules P_M; and a set of updating rules P_U.
Output: a set of alignments $\mathcal{A}$.

```
for c ∈ C do
    A_c ← ∅;
for ρ_M ∈ P_M do
    for w_{s,e} ← spans(W) do
        for c ∈ C do
            if ρ_M(c, w_{s,e}) then
                A_c ← A_c ∪ (s, e, nil);
updated ← true ;
while updated is true do
    updated ← false;
    for ρ_U ∈ P_U do
        for c, c' ∈ C × C do
            for (s, e, d) ∈ A'_c do
                if ρ_U(c, w_{s,e}) ∧ (s, e, c') ∉ A_c then
                    A_c ← A_c ∪ (s, e, c');
                    updated ← true;
𝒜 ← ∅ ;
for (a_1, ..., a_c) ∈ CartesianProduct(A_1, ..., A_{|C|}) do
    legal ← true;
    for a ∈ (a_1, ..., a_c) do
        (s, e, c') ← a;
        (s', e', d) ← a_{c'};
        if s ≠ s' ∧ e ≠ e' then
            legal ← false ;
    if legal then
        𝒜 ← 𝒜 ∪ (a_1, ..., a_c);
```

“乱”的原因：视线跳动过多

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- We conduct experiments on LDC2014T12
- We evaluate the alignment F-score and Smatch of resulted parsers

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x3	71.9	67.4
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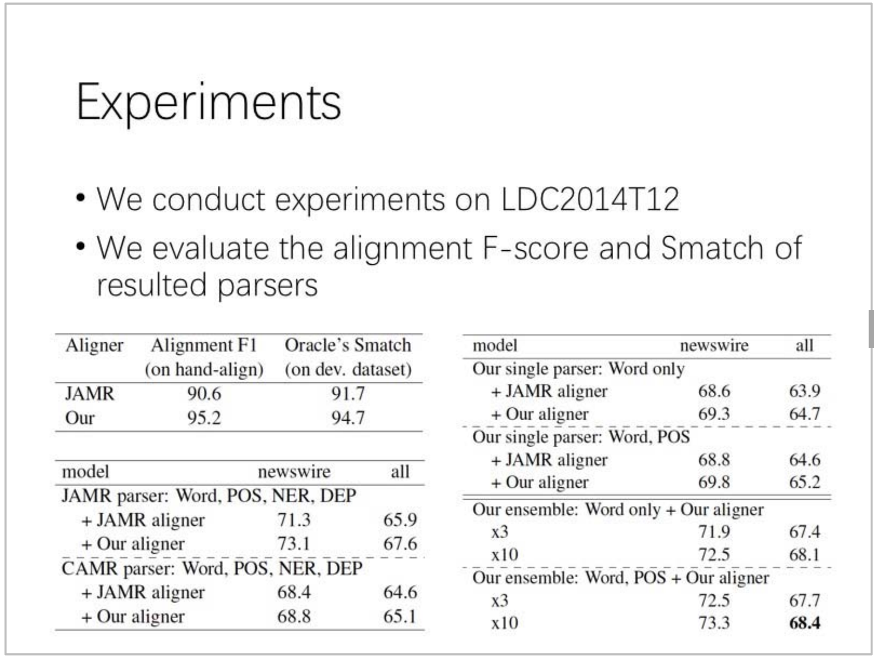
“乱”的解法：重新组织内容



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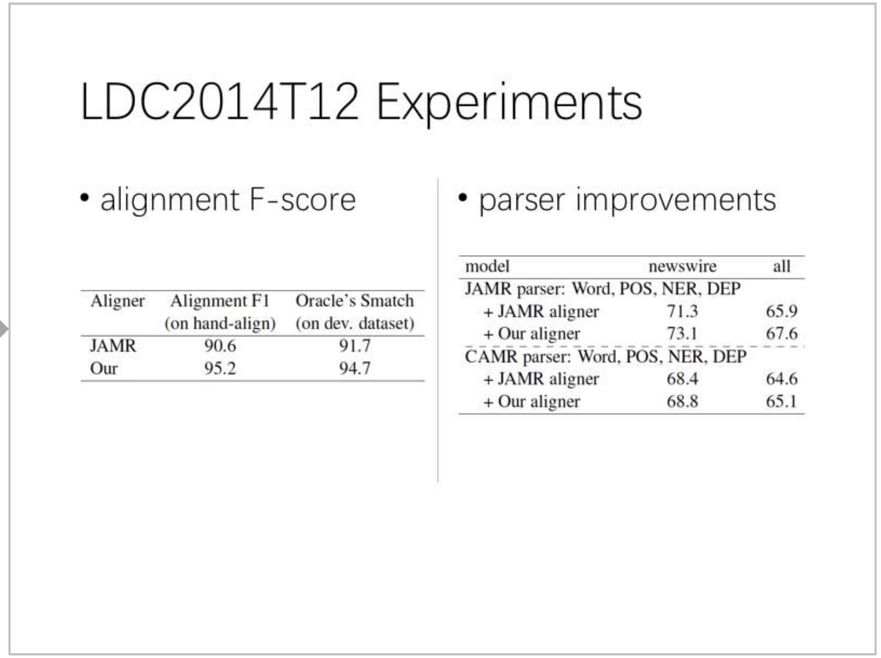

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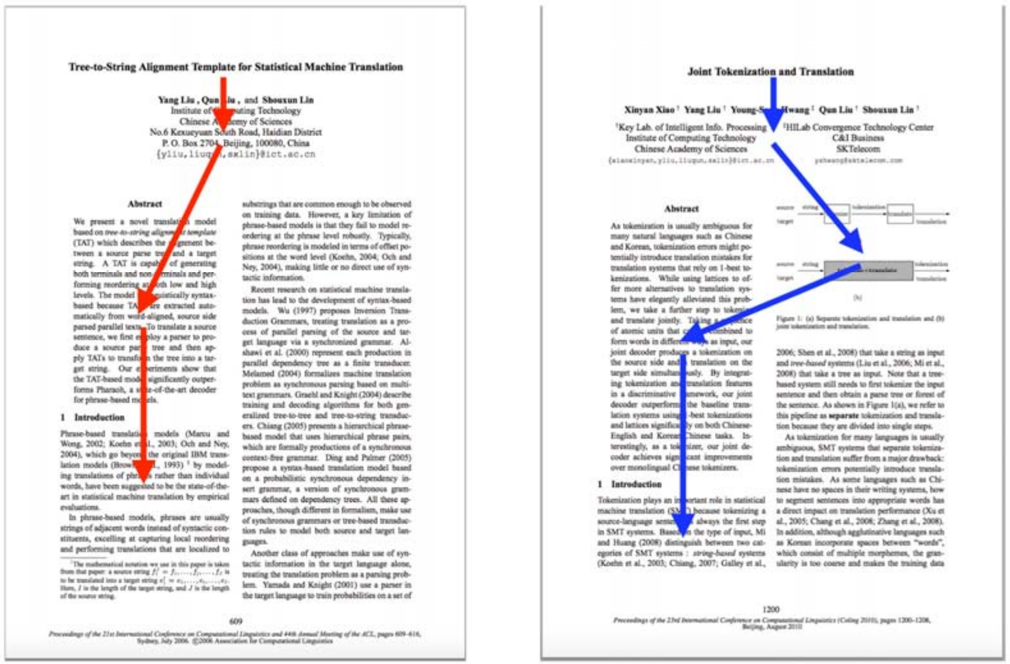
视线跳动在论文写作中的作用

信息流的变化

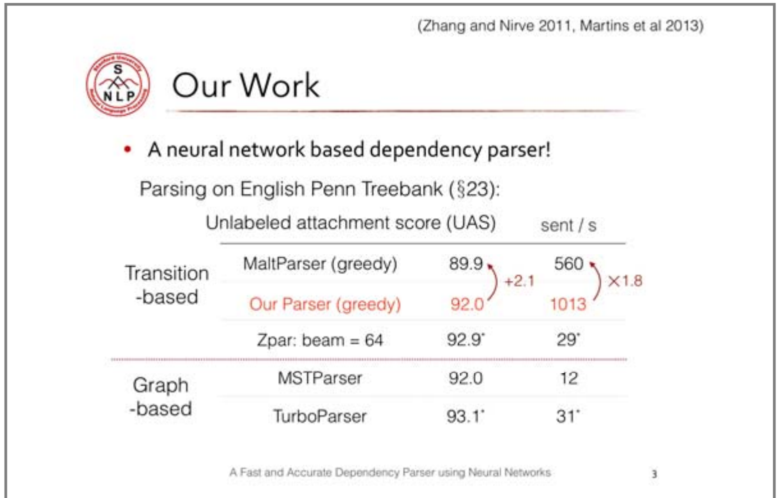


刘洋. 2014. 机器翻译学术论文写作方法与技巧

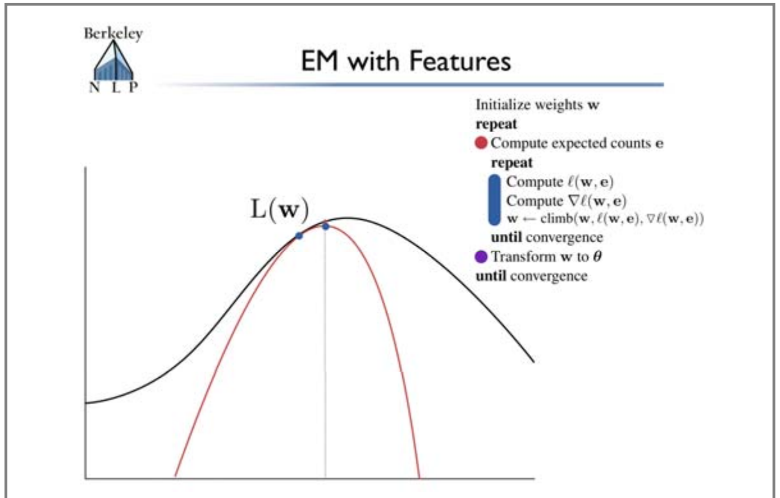
参考文献

- Simon Peyton Jones: How to give a great talk
- 写给大家看的设计书
- 机器翻译学术论文写作方法与技巧
- 知乎专栏：跟我学个P

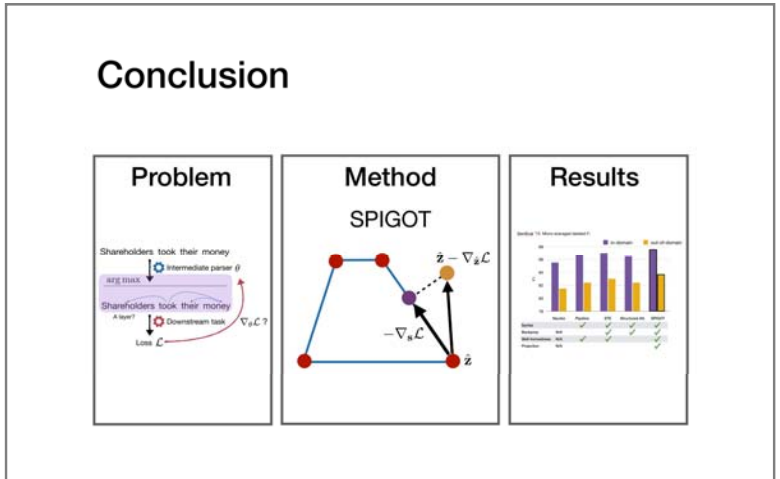
总结



为了抓住听众，把最好的部分前置



模型部分有取舍，用好图和例子



“结论”也有新思路

四项设计的基本原则

祝大家产出优秀的学术工作