



TA-Preview

史嘉彤

Jiatong Shi

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About Me

- Jiatong Shi
- BE of CS at RUC, CS Master at JHU
- Mainly focus on Speech Processing
 - Speech Recognition (Multilingual Speech Recognition, Robust Speech Recognition)
 - Speech Super-resolution
 - Singing Voice Synthesis
 - Computer-Assisted Language Learning
 - Data Analytics, Fraud Detection

Computer Assisted Pronunciation Training

- Adopted by Youdao AI (有道智云)
- <https://ai.youdao.com/product-assess.s>



Speech Super-Resolution

AI在会议音频中的当前应用（1）- 音频领域的超分-带宽扩展

云社区 intel



腾讯会议方案，基于语音信号特征建模，实现轻量体积，轻松在客户端部署！

- Adopted by Tencent Meeting (腾讯会议)

AI, ML, DL

- What are AI, ML, DL
- What's the relationship between them
- Achievements on AI, ML, DL

AI in our Daily Life

- Recommendation System
- Search Engine
- Dialog System
- Speech Recognition
- Translation
- Fraud Detection

Basics for AI Foundation

- Math (Probability theory, Linear Algebra, Calculus, Operation Research)
- Computer Science (Data Structure, Computing Efficiency, Algorithm)
- Electrical Engineering (Signal Processing, physical architecture)
- Other Subjects (Philosophy, Linguistic, Music, Finance, etc.)

Syllables for TA Session

Date	Themes	Details
7.27	Mathematic Foundation of Machine Learning	Some basics of Calculus, Probability Theory I
7.28	Mathematic Foundation of Machine Learning	Some basics of Probability Theory II and Linear Algebra
7.29	ML Algorithm: Linear Regression	Definition of LR Learning of LR, Interpretation of LR
7.30	ML Algorithm: Logistic Regression, Perceptron, SVM and kernel Tricks	Intro to Logistic Regression, Perceptron, SVM and kernel Tricks
7.31	Introduction to Programming (python)	Basic Programming Concepts, Data structure

8.3	ML Algorithm: Expectation Maximization	Intro to EM
8.4	ML Algorithm: Graphical Model	Intro to Naïve Bayes, HMM and CRF
8.5	ML Algorithm: Artificial Neural Networks	Intro to some advanced NN (CNN, RNN, Seq2Seq Model)
8.6	Application: Speech Processing I	Some basics of speech processing techniques (speech recognition)
8.7	Application: Speech Processing II	Some basics of speech processing techniques (speech synthesis, speech front-end)

Syllables for TA Session (Cont'd)

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How to Read a Research Paper

- Basic Components of Research Paper
 - Abstract & Keywords
 - Introduction
 - Literature Review
 - Methodology
 - Experiments
 - Results and Discussion
 - Conclusion
 - References

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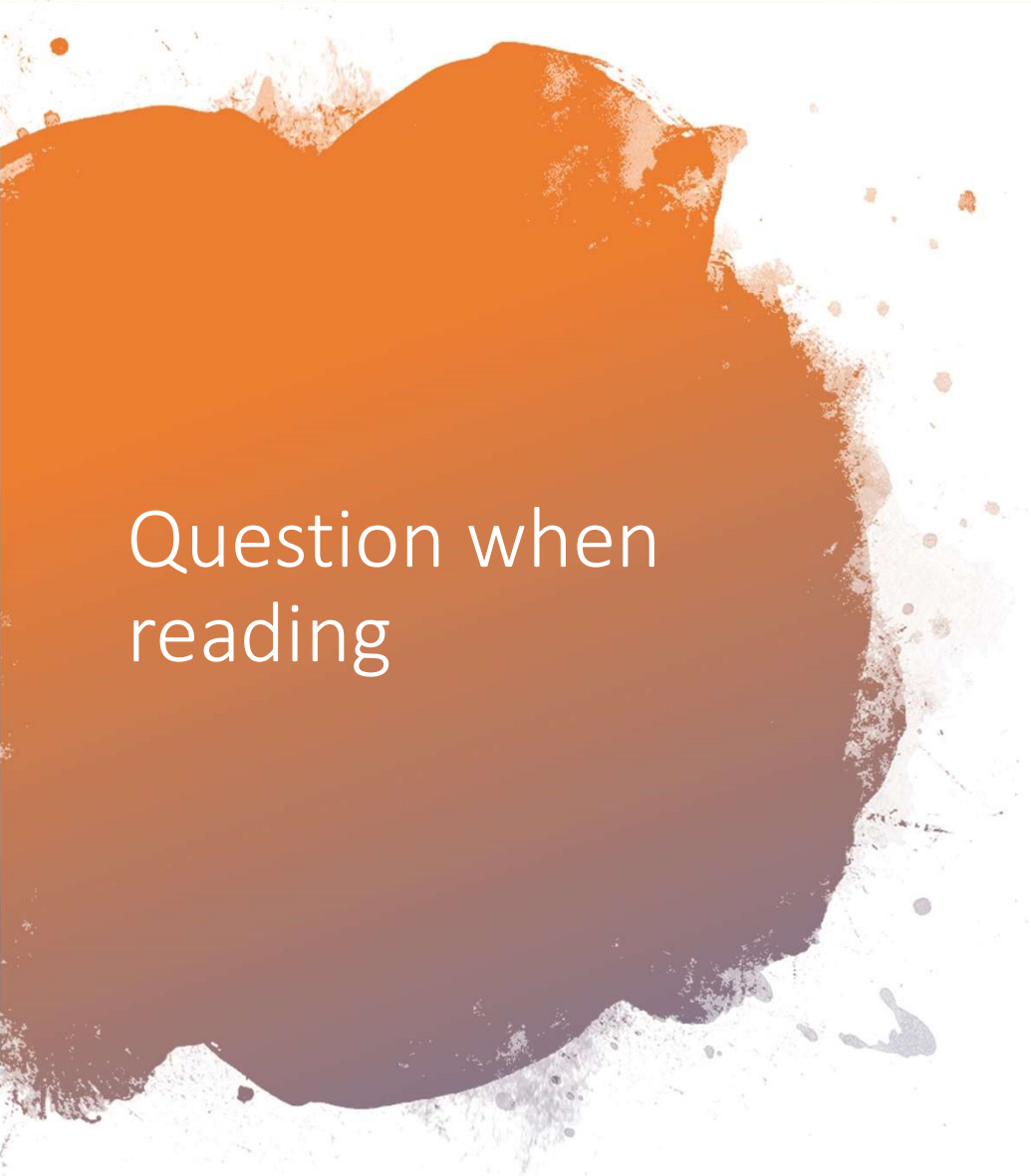
How to Read a Research Paper (Cont'd)

- Read Priority (if familiar with the field)
 - Abstract
 - Conclusion
 - Introduction
 - Methodology
 - Experiments and Results

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How to Read a Research Paper (Cont'd)

- Read Priority (if not familiar with the field)
 - Abstract
 - Introduction
 - Methodology
 - Experiments and Results
 - Conclusion



Question when reading

What is the task

Why is the task

How is the task

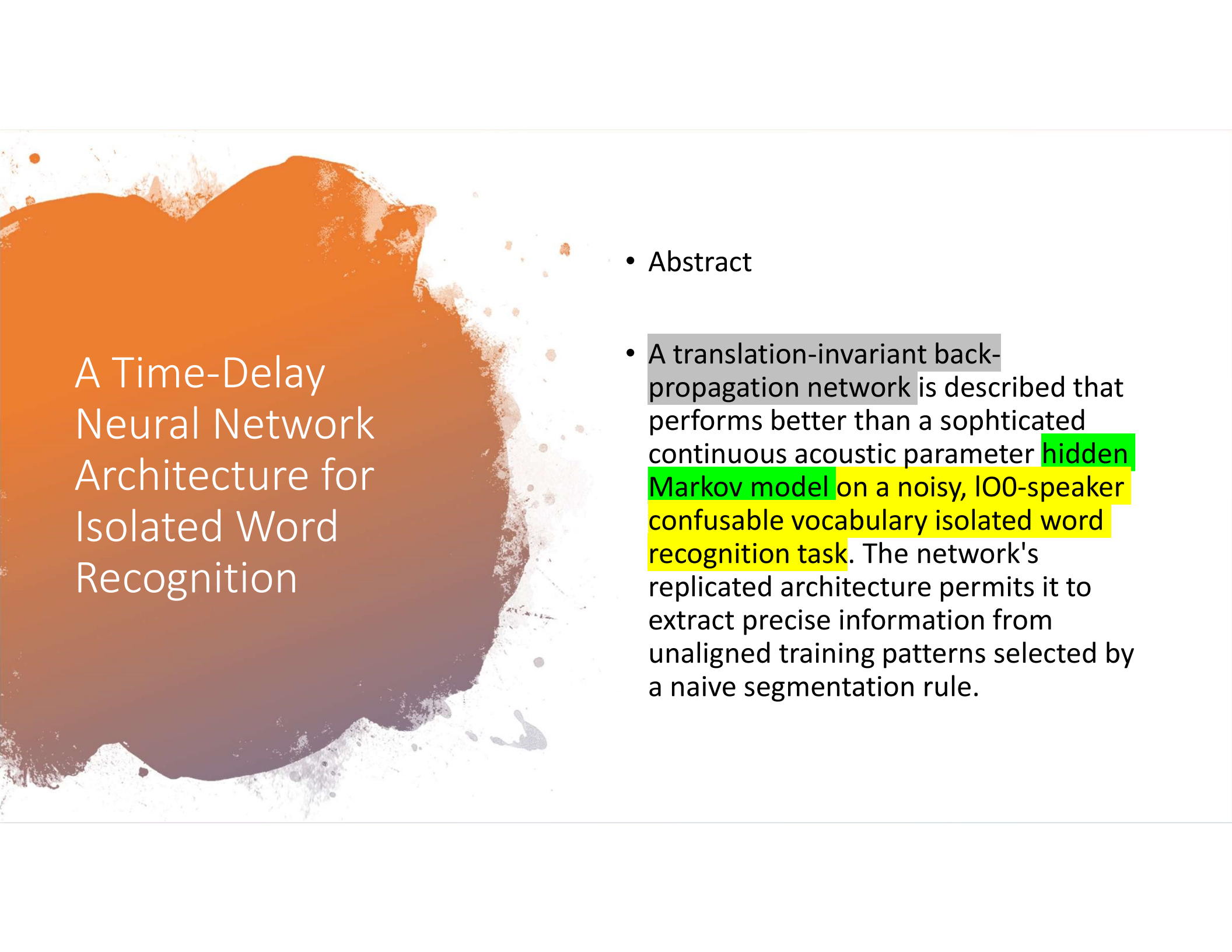
What are the contributions

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After Reading

Take some
notes

Recur the
model



A Time-Delay Neural Network Architecture for Isolated Word Recognition

- Abstract
- A translation-invariant back-propagation network is described that performs better than a sophisticated continuous acoustic parameter hidden Markov model on a noisy, 100-speaker confusable vocabulary isolated word recognition task. The network's replicated architecture permits it to extract precise information from unaligned training patterns selected by a naive segmentation rule.



Q&A
