

# YU BAO

Ph. D. · Nanjing University

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## EDUCATION

### Nanjing University

PH. D. IN COMPUTER SCIENCE

- Dissertation: *Research on Deep Text Generation Models with Structure Modeling*
- Advisor: Prof. [Jiajun Chen](#) and Prof. [Shujian Huang](#)

Nanjing, China

Mar. 2022

### Northeast Forestry University

B. SC. IN MATHEMATICS

- Thesis: *Stock Selection by Clustering and Dynamic Programming*

Harbin, China

Jul. 2015

## EMPLOYMENTS

### ByteDance AI Lab

RESEARCH INTERN

- **Parallel Decoding Sequences by Glancing Discrete Latent Variables** [1]

**Highlight:** We propose to train non-autoregressive models by glancing training with discrete latent variables, which eliminates the limitation of knowledge distillation and implements the high-efficient parallel decoding on widely scenarios.

- **Glancing Transformer for Non-Autoregressive Neural Machine Translation** [3]

**Highlight:** This work achieved success in [WMT-2021](#) and won the first place in *English↔German translation setting*. It also has been deployed to [ByteDance VolcTrans](#). To the best of our knowledge, it is the first deployed parallel translation system in the world with 10X speedup.

- Mentor: Dr. [Hao Zhou](#)

Shanghai, China

Apr. 2021 - Present

### ByteDance AI Lab

RESEARCH INTERN

- **PNAT: Non-autoregressive Transformer by Position Learning** [7]
- **Generating Sentences from Disentangled Syntactic and Semantic Spaces** [6]
- Mentor: Dr. [Hao Zhou](#) and Dr. [Lei Li](#)

Beijing, China

Jan. 2019 - Sept. 2019

## RESEARCH INTERESTS

I'm interested in natural language processing and deep learning, such as natural language understanding (word segmentation, named entity recognition, syntactic parsing, etc.) and natural language generation (paraphrase generation, machine translation, controllable text generation, etc.).

- **Natural Language Understanding:** In my earlier research experiences, I was devoted to *structural prediction tasks*.
- **Natural Language Generation:** Since 2018, I have been studying *deep generative models*, including variational autoencoders (VAE) or non-autoregressive Transformer (NAT). The research findings are published at top-tier \*ACL venues.

## SKILLS

**Programming** Python, PyTorch, LaTeX  
**Languages** Chinese (native), English (CET6)

## PUBLICATIONS

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1. **Parallel Sequence Decoding by Mixing Discrete Latent Variables**  
**Yu Bao**, Hao Zhou, Shujian Huang, Dongqi Wang, Lihua Qian, Xinyu Dai, Jiajun Chen and Lei Li  
*ACL 2022* | CCF-A | [Paper](#) | [Code](#)
2. **Unsupervised Paraphrasing via Syntactic Template Sampling**  
**Yu Bao**, Shujian Huang, Hao Zhou, Lei Li, Xinyu Dai, Jiajun Chen  
*SCIENTIA SINICA Informationis 2022* | CCF-A in Chinese | [Paper](#)
3. **Glancing Transformer for Non-Autoregressive Neural Machine Translation**  
Lihua Qian, Hao Zhou, **Yu Bao**, Mingxuan Wang, Lin Qiu, Weinan Zhang, Yong Yu, Lei Li  
*ACL 2021* | CCF-A | [Paper](#) | [Code](#)
4. **Non-Autoregressive Translation by Learning Target Categorical Codes**  
**Yu Bao**, Shujian Huang, Tong Xiao, Dongqi Wang, Xinyu Dai, Jiajun Chen  
*NAACL-HLT 2021* | CCF-C | [Paper](#) | [Video](#) | [Code](#)
5. **Explicit Semantic Decomposition for Definition Generation**  
Jiahuan Li\*, **Yu Bao\***, Shujian Huang, Xinyu Dai, Jiajun Chen  
*ACL 2020* | CCF-A | [Paper](#) | [Video](#)
6. **Generating Sentences from Disentangled Syntactic and Semantic Spaces**  
**Yu Bao\***, Hao Zhou\*, Shujian Huang, Lei Li, Lili Mou, Olga Vechtomova, Xinyu Dai, Jiajun Chen  
*ACL 2019* | CCF-A | [Paper](#) | [Code](#)
7. **PNAT: Non-Autoregressive Transformer by Position Learning**  
**Yu Bao**, Hao Zhou, Jiangtao Feng, Mingxuan Wang, Shujian Huang, Jiajun Chen, Lei Li  
*preprint 2019* | [Paper](#)
8. **Non-autoregressive Machine Translation by Modeling Syntactic Dependency Interrelation**  
**Yu Bao\***, Dongqi Wang\*, Shujian Huang, Xinyu Dai, Jiajun Chen  
*Under review 2022*
9. **Mitigating Fluency Bias in Likelihood-based Generative Models for Out-of-distribution Detection**  
Yawen Ouyang, Shi Zong, **Yu Bao**, Xinyu Dai, Shujian Huang, Jiajun Chen  
*Under review 2022*

## TALKS

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1. Research and Development of Parallel Text Generation, ByteDance AI Lab, Oct. 2021.
2. Advice for Undergraduate Students, Northeast Forestry University, Nov. 2020.

## ACADEMIC SERVICES

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Student Member of Youth Working Committee of the Chinese Information Processing Society of China (CIPSC)

Journal Reviewer of Journal of Artificial Intelligence Research (JAIR)

Program Committee Members of SIGKDD 2022, NAACL 2022, ACL 2022, ICLR 2022, AAAI 2022, EMNLP 2021, ACL 2021, IJCAI 2020, etc.

## TEACHING EXPERIENCES

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1. Teaching Assistant: Natural Language Generation and Machine Translation, Nanjing University, 2021
2. Teaching Assistant: Advanced Programming in C++, Nanjing University, 2020 & 2018
3. Teaching Assistant: Introduction to Software Industry, Nanjing University, 2018

## AWARDS

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Outstanding PhD candidate, Nanjing University, 2020  
Artificial Intelligence Scholarship, Nanjing University, 2019  
Outstanding Graduate Student, Nanjing University, 2019  
First-Class Academic Scholarship of Graduate Student, Nanjing University, 2016  
The Second Prize of the Heilongjiang Province Division in National University Student Mathematical Modeling Competition, 2013