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**INTRODUCTION**

I am currently a Senior Speech Algorithm Engineer at Mobvoi AI Lab(Beijing). My working area is text-to-speech(TTS), in which I primarily focus on text information extraction to guide the naturalness and expressiveness of TTS. My research interests lie in natural language processing(NLP) and I'm particularly interested in natural language understanding, semantic analysis, knowledge acquisition, information extraction, information representation, and application.

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**EDUCATION****Master Student Software Engineer (M.Sc.)****Oct. 2016 – Jan. 2019***Beijing University of Technology BJUT; overall grade: 86 (max. 100) between "Very Good" and "Good"**Beijing, China*

- **Thesis:** "Research on multi-scene video intelligent processing system and scheduling management algorithm"
- **Advisors:** Dr. [Zhangqin Huang](#)

**Bachelor Student Computer Science (B.Eng.)****Sep. 2012 – Jul. 2016***Southwest Minzu University SMU; overall grade: 3.66 (max. 4.0), "Top 5" of 154 students**Chengdu, China*

- **Thesis:** "Research on Intelligent Laboratory Management System"
- **Advisors:** Dr. [JianYin Chen](#)

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**PROFESSIONAL EXPERIENCE****Senior Speech algorithm Engineer****Jul. 2019 – Present***[Mobvoi AI Lab] [出门问问开放平台]**Beijing, China*

- **As mentor:** working with 3 interns (avg.) in NLP and text-to-speech(TTS)
- **As researcher:** tokenization, text normalization, polyphone, prosody, unified-frontend, stress, style, emotion.(**multi-language domain and text information extraction**)
- **As developer:** develop and optimize algorithms of tts(80% is nlp), online and portable server to support toB/toC services(block/streaming/concurrent/http/gRPC)
- **Involved techniques:** \*Language\*: C/C++, Python, Bash; \*Algorithm\*: design pattern, data mining, data crawling, FST, CRF, LSTM, semantic analysis, dialog analysis, word embedding, pre-training, emotional analysis, contrastive learning, knowledge distillation, multi-task; semi-supervision; \*Tools\*: Linux, Tensorflow, Pytorch, Redis, MySQL, Docker, gRPC, XML, AWS, MicrosoftCloud, GoogleCloud, AlibabaCloud, TencentCloud, etc.
- **Key results:** [tech-website: VoiceMaker](#)、[DupDub\(oversea\)](#); one (\*)regular staff opportunity for intern; one co-author submission to [NLPAL2022](#) + five patents; one first-author submission to [ICASSP2023](#) + two patents(reviewing)

**Algorithm Research(Intern)****Aug. 2018 – Dec. 2018***TAL AI Lab**Beijing, China*

- **As researcher:** Knowledge Tracing : **network representation learning**(NE/NRL), **relation information**(co with Dr.Wang)
- **As developer:** develop a deep knowledge tracing(DKT) pipeline to verify different methods: data mining, weight graph building, graph embedding, metric distance, model construction
- **Involved techniques:** \*Language\*:Python, Bash; \*Algorithm\*: data mining, graph embedding, LSTM, GCN etc.; \*Tools\*: Tensorflow, AliCloud, Google Codelab, t-SNE, etc.
- **Key results:** Excellent 'intern' of ten members; one co-author conference submission to [AIED2019](#); (\*)regular staff opportunity

**DeeCamp AI Lab (Member)****Jun. 2018 – Aug. 2018***DeeCamp - co with Peking University**Beijing, China*

- **As researcher:** Movie Recommendation based on **Knowledge Graph(KG)**: recommendation system(RS), information extraction(IE) for KG, knowledge representation(co with two Ph.D. three M.Sc.)

- **As developer:** data mining, knowledge graph building, link prediction, graph embedding, metric distance, verify RS methods(CF, FM, PNN, etc.), recommendation reason generation(RippleNet), API
- **Involved techniques:** \*Language\*: Python, Bash, JavaScript; \*Algorithm\*: data mining, Trans\*, GCN, etc.; \*Tools\*: Keras, Ucloud, Google Codelab, etc.
- **Key results:** [github project](#), Excellent Team of 20 groups, (\*)internship opportunity

### Ali Tianchi Competition (Competitor)

Sep. 2017 – Dec. 2017

[Tianchi - co with CCF](#)

Bwijing, China

- **Subject:** User Location Prediction: predicting user's current store location based on user consumption data.
- **As researcher:** data mining, boosting learning, ensemble learning, ablation analysis
- **Involved techniques:** \*Language\*: Python, Bash, SQL; \*Algorithm\*: data mining, random forest(RF), LR, XgBoost, GBDT, LightGBM, etc.; \*Tools\*: MySQL, AliCloud, etc.
- **Key results:** Preliminary: 52/2845 , Final: 19/2845

### Personal Projects

Sep. 2016 – Aug. 2018

[IOT-Lab](#)

Beijing, China

- - **Ali Tianchi Competition:** O2O coupon usage predictions e.g.
- - **TextCNN:** Methods are implemented based on TF-IDF, xgboost, lgb, textcnn, etc. [code](#)
- - **Dialogue Generation:** Simmc2 task: Methods are implemented based on BERT, GPT, Multimodal, etc.
- - **TAL AI Lab:** FutrueCamp: Research on Recommendation Systems, after that I got an internship
- - **IoT Bus HD Intelligent Video Surveillance:** Programming and development of application algorithms
- - **IOT-AI Video Analyser:** Programming and development of application algorithms
- **Involved techniques:** Python, Bash, C++; Linux, MySQL, WebSocket; CV, NLP, RS, Data Mining, ML, DL; etc.
- **Key results:** system release, thesis experiment

## EXPERTISE AND SKILLS

Expertise is context- and comparison-dependent. Here states the years of experience in terms of use, also indicates a subjective estimation of the level of expertise (either *elementary*, *intermediate*, *experienced*, or *expert*):

- **NLP/Speech Synthesis:** Semantic Analysis(tokenization, text normolization, polyphone, g2p, prosody, unified-frontend *experienced*); Emotion-TTS (style, stress, emotion analysis, contrastive learning, unsupervised learning *experienced*); Knowledge Information (knowledge tracking, knowledge representation, etc. *intermediate*); TTS Backend Model (acoustic models, vocoder *elementary*);
- **Machine/Deep learning:** Basic Knowledge (continuing: online courses, tech-blog, github, huggingface, open-source projects, research news etc. *intermediate*; Data Mining (5 years of study and work, numpy/pandas/seaborn/t-sne/etc., *experienced*); Backend Development (3 years of industrial c++ server engineering, good at logic/structure, using C++/Python/etc., *experienced*).
- **Language:** C/C++ (3+ years, *experienced*); Python (5+ years, *experienced*); Writing (3+years, good writing habits.) I speak native Mandarin; elementary English.

## SCHOLARSHIPS AND AWARDS

### Ali Tianchi Competition

Good,19/2845

Sep. 2018

Beijing, China

### China National Scholarship

Southwest Minzu University

Sep. 2016

Chengdu, China

### Outstanding secretary of Youth League branch Scholarship

Southwest Minzu University

May 2014

Chengdu, China

### Annual Excellent Student Innovative Project

Southwest Minzu University, 2nd Award

Sep. 2013

Chengdu, China

### Outstanding Student Scholarship

Southwest Minzu University

Jun. 2013, Jun. 2014

Chengdu, China

## TEACHING EXPERIENCE

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### Lecture - Embedded System Design Practice

2018

Winter

As teaching assistant at BJUT, for M.Sc. students, approx. 80 students each year.

### Company - Speech & NLP

2021-present

Annual

As a mentor at Mobvoi, for interns (students), avg. 3 students each year.

## PUBLICATIONS

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### Proceedings

- **Feng X**, Xie R, Sheng J, et al. *Population statistics algorithm based on MobileNet*. Journal of Physics: Conference Series. IOP Publishing, 2019(ICSP'19), 6 pages. <https://iopscience.iop.org/article/10.1088/1742-6596/1237/2/022045/pdf>.
- Wang Z, **Feng X**, Tang J, et al. *Deep Knowledge Tracing with Side Information*. International conference on artificial intelligence in education. Springer, Cham, 2019(AIED'19), 5 pages. <https://arxiv.org/pdf/1909.00372.pdf>.
- Rong Xie, **Feng X** *A method of quick edge detection based on Zynq*. International Conference on Cloud Computing and Internet of Things, 2018(CCIOT'18), 5 pages. <https://ieeexplore.ieee.org/document/9032641>.
- Sheng J, **Feng X** *Research on the Internet of Things Platform for Smart and Environmental Protection*. International Conference on Cloud Computing and Intelligence Systems, 2018(CCIIS'18), 5 pages. <https://ieeexplore.ieee.org/document/8691352>.
- Zhang J, **Feng X**, Chen Y, et al. *Prosody Prediction With Discriminative Representation Method*. International Conference on Pattern Recognition and Machine Learning, 2022(PRML'22), 5 pages. <https://ieeexplore.ieee.org/abstract/document/9882251>.
- Chi W, **Feng X** (\*equal contribution), Chen Y, et al. *Stress Prediction Based on Multi-Granularity Linguistic Knowledge*. IEEE International Conference on Acoustics, Speech and Signal Processing International Conference on Pattern Recognition and Machine Learning, 2023(ICASSP'23), 5 pages. reviewing.

### Patents

- **FENG XIAOQIN**, LEI XIN, LI ZHIFEI. *Polyphone labeling method and device, and computer readable storage medium*. Mobvoi(algorithm), 2019, CN111078898A.patent.pdf
- **FENG XIAOQIN**, LEI XIN, LI ZHIFEI. *Speech synthesis method and device and computer readable storage medium*. Mobvoi(algorithm), 2020, CN110970013A.patent.pdf
- **FENG XIAOQIN**, LI NA, LEI XIN, LI ZHIFEI. *Polyphone labeling method and device, and computer readable storage medium*. Mobvoi(application), 2020, CN111145724A.patent.pdf
- other 2 co-patents published: CN111079428A.patent.pdf CN111178042A.patent.pdf

### Theses

- **Xiaoqin Feng**. 2019. *Research on multi-scene video intelligent processing system and scheduling management algorithm*. In the Institute of Software Engineering. Beijing University of Technology. 78 pages. **Master Thesis**. [https://kns.cnki.net/master\\_thesis.pdf](https://kns.cnki.net/master_thesis.pdf)
- **Xiaoqin Feng**. 2016. *Intelligent Laboratory Management System*. In the Institute of Computer Science and Engineering. Southwest Minzu University. 37 pages. **Bachelor Thesis**.