

TAIWEI WU

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EDUCATION

Shenzhen Technology University, Computer Science and Technology, *Bachelor* 2020.9 - 2024.6

GPA 3.6/4.5, Top 20%, **President's Award** (the top-tier scholarship granted in SZTU)

TOEFL iBT: 96

RESEARCH INTERESTS

- **Music information retrieval (MIR)**
MIR holds my keenest interest. Developing an automatic music transcription has long been my aspiration. Towards this goal, I have independently studied much about music technology without mentorship and published a paper on the topic.
- **Natural Language Processing (NLP)**
During my undergraduate studies, my advisor's primary research focus was in the field of NLP. Under his guidance, I was exposed to some work on large language models (LLM). I came to understand the potential applications of these methods and findings in other domains (e.g. MIR) going forward. I hope to explore this topic in more depth going ahead in my own work.

PROJECT EXPERIENCE

A MIDI Retrieval System Based on MG2V 2023.3 - 2023.12

- **Project Background:** Representing words as embeddings is commonly used in NLP tasks. As music shares properties with text, representing music as embeddings could also enable retrieval systems. However, training music embeddings in common methods like skip-gram would significantly increase training time as data scales. Our algorithm Music-Graph2Vec (MG2V) aims to reduce this time, while it's up to 55 times faster than skip-gram by building a graph from the data and sampling within it, while maintaining quality. Based on this, we plan to develop a system allowing users to upload MIDI files and receive song metadata through a web interface.
- **Role:** As the project lead, I initially collected relevant materials and selected the topic. I conducted the core development work and programming for the MG2V algorithm, and directed experiments related to MG2V. Currently, I am leading teammates in building our web interface using Node.js.
- **Results:** Our work on MG2V has been documented in the paper "Music-Graph2Vec: An Efficient and Effective Method for Embedding Pitch Segment", which has been accepted to ACM MM Asia 2023.

PUBLICATION

T. Wu, J. Zhang, L. Duan, Y. Cai, "Music-Graph2Vec: An Efficient Method for Embedding Pitch Segment", in *ACM Multimedia Asia (MMAsia '23)*, Dec. 2023 (accepted)

LEADERSHIP EXPERIENCE

ACM-ICPC Club of SZTU, *Co-founder & Inaugural President* 2020.10 - 2022.10

Our club mainly focuses on training members to take part in collegiate programming competitions, such as ICPC (International Collegiate Programming Contest). In 2020, I gathered a small group of 20 fellows to launch the club. Now we have nearly **800 members**, with around 200 people regularly attending each individual training session. Through our collective efforts, the club has built a strong training program. It includes introductory coding workshops for newcomers as well as personalized training plans for more advanced members based on their competition goals. In our first year (2021), club members were able to win a bronze medal at the ICPC Regional competition. During the 2021-2022 academic year alone, members collectively earned 38 awards at the national-level collegiate programming contests. Moreover, during my time leading the club, we organized six programming competitions across campus successfully. Participation grew from around 60 people initially to over 300 (unfortunately we had to hold an online qualifying round due to space issues). In the annual reviews by our university, our club has consistently been rated "Excellent," as one of the top 20% of clubs in our university, since we started.

AWARDS

The First Prize of the National Final of RoboCom-CAIP Programming *	2022
RoboCom is a national competition recognized by the Ministry of Education of China. I ranked 58th out of 1126 .	
The Second Prize of CCCC-GPLT *	2023
“CCCC-GPLT” refers to “China Collegiate Computing Contest - Group Programming Ladder Tournament”. It is also a national competition recognized by the Ministry of Education of China.	
The Third Prize of CCCC-GPLT for Valuable Players *	2022
I received this award in recognition of my outstanding individual contributions as part of my team.	
The Second Prize of the National Final of Lanqiao Cup C++ Programming Competition *	2023
“Lanqiao Cup” is one of the longest-running collegiate programming competitions in China. It is also a national competition recognized by the Ministry of Education of China.	
The First Prize of the Guangdong Provincial Competition of Lanqiao Cup †	2023
I earned a place in the national final because of my strong performance here.	
The First Prize of the Guangdong Provincial Competition of Robocom-CAIP †	2022
I earned a place in the national final because of my strong performance here.	
Bronze Medal of CCF-CCSP Southern China Regional †	2022
Collegiate Computer Systems and Programming Contest (CCSP) is organized by the China Computer Federation (CCF).	
Bronze Medal of Guangdong Collegiate Programming Contest †	2022
The Second Prize of the Guangdong Provincial Competition of Lanqiao Cup †	2022
President’s Award ‡	2022
The top-tier scholarship granted in SZTU. Only 43 out of 13,000 undergraduate students received it.	
The First Prize of Research and Innovation Award ‡	2022
This year I won two of this award, one for my individual accomplishments and the other for my team’s achievements.	
The Second Prize of Outstanding Student Cadre Award ‡	2022
I was honored with this award for the excellent work of ACM-ICPC Club under my leadership.	

VISIT

University of Western Australia	2023.7 - 2023.8
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*National award

†Provincial award

‡University-level award