Beilong Tang

Email: bt132@duke.edu · **Google Scholar**: Beilong Tang - Google Scholar

EDUCATION

Duke Kunshan University (DKU) & Duke University Dual Degree — Class of 2025
B.S. in Computer Science (DKU) — Kunshan, China
B.S. in Interdisciplinary Studies; Applied Math & Computational Sciences; Computer Science (Duke) Durham, U.S.

- GPA: 3.858/4.0
- Notable Courses:
  - COMPSCI 309 Elements of Machine Learning – A
  - COMPSCI 311 Computer Network Architecture – A+
  - COMPSCI 402 Artificial Intelligence – A
  - STATS 303 Statistical Machine Learning – A-
  - MATH 302 Numerical Analysis – A+
  - MATH 305 Advanced Topics in Linear Algebra – A+
  - (Duke) COMPSCI 308 Advanced Software Design and Implementation – A
  - (Graduate Course at Duke) ECE 689 Advanced Topics in Deep Learning – A+
  - (Graduate Course at Duke) ECE 572 Introduction to Natural Language Processing – A

RESEARCH INTEREST

Deep Learning, Signal Processing, Speech Separation and Enhancement, Natural Language Processing, IoT, Federated Learning, Edge Computing, AI System

RESEARCH EXPERIENCE

Research Assistant for Speech Separation and Enhancement — May. 2024 – Present
The SMIIP Lab, DKU — Supervisor: Dr. Ming Li

- Conduct speech separation and enhancement using discrete tokens and Large Language Models.
- My first-author paper TSELM: Target Speaker Extraction using Discrete tokens and Language Models is submitted to ICASSP 2025 which is the first to investigate the use of audio tokens and language models for target speaker extraction through comparative experiments and comprehensive metrics.
- Explore discretization methods for mixed speech.

Research Assistant for Federated Learning Project — May. 2023 – Jan. 2024
The Edge Intelligence Lab, DKU — Supervisor: Dr. Bing Luo

- Deployed Federated Learning (FL) and Federated Analytics (FA) on Edge Devices.
- Built privacy-preserving health monitoring system using FL and FA on DKU campus.
- Full-stack development for Android and iOS devices.

PUBLICATIONS

Tang, B., & Li, M. (2024). Target Speaker Extraction using Self-Supervised Models and Decoder-only Large Language Models. Manuscript in preparation, planned submission to ICME 2025

Tang, B., Zeng, B., & Li, M. (2024). TSELM: Target Speaker Extraction using Discrete Tokens and Language Models. *arXiv preprint arXiv:2409.07841*. Submitted to ICASSP 2025

Geng, J., **Tang, B.**, Zhang, B., Shao, J., & Luo, B. (2024). Demo: FedCampus: A real-world privacy-preserving mobile application for smart campus via federated learning & analytics. In *Proceedings of the 25th International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc '24)*. ACM.

He, S., **Tang, B.**, Zhang, B., Shao, J., Ouyang, X., Nugraha, D. N., & Luo, B. (2024). Fedkit: Enabling cross-platform federated learning for Android and iOS. In *IEEE INFOCOM 2024 - IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)* (pp. 1–2). https://doi.org/10.1109/INFOCOMWKSHPS61880.2024.10620662

SIDE PROJECTS

Open-Source Developer for Simple-Markdown-Editor — Oct. 2023
DKU

- Built a web application using Django for simple markdown editing and collaboration within a team.
- Designed for easy deployment and user-friendly operation.
- Enabled real-time collaboration, allowing multiple users to edit a markdown file simultaneously.

Research Assistant for Search Engine Research Project   Oct. 2022 – May. 2023
The Search So Team, DKU   Instructor: Dr. Jiang Long
- Developed benchmarks to evaluate the performance of our self-developed search engine.
- Created <u>DKU-Wiki</u> in Vue and Django to demonstrate the search engine's functionality.

Leadership & Developer for Student Entrepreneurship Project   Oct. 2022 – Jan. 2023
The Roomie Student Entrepreneurship Team, DKU
- Developed an app enabling college students to find roommates based on MBTI personality types.
- Collaborated closely with leadership team members to drive project vision and execution.
- Recruited team members with a passion for programming and relevant technical skills.

TEACHING EXPERIENCES

Teaching Assistant for COMPSCI 201: Intro to Programming and Data Structures   May. 2022 – May. 2023
The Computer Science Center, DKU   Instructor: Dr. Jiang Long
- Developed quiz website using Django framework in Python – no bugs were reported in usage.
- Cooperated with other teaching assistants to come up with new quizzes and teaching plans for the course.
- Covered course material and homework in recitation and lab sections to improve students' grades.

SERVICES

- President for DKU Running Club   May. 2024 – Present
  o Lead daily practices.
  o Collaborate with other leaderships to build comfortable and inclusive running atmosphere.
  o Compete in cross-countries, half marathons and marathons.
- Vice President for DKU Basketball Club & DKU Basketball Varsity Team Member   May. 2021 – Jan. 2024
  o Organized and coordinated basketball events, ensuring smooth execution and participation.
  o Managed financial planning and budgeting for club events and activities.
  o Competed in games representing DKU.
- Volunteer for Duke China US-Summit   Aug. 2023
- Volunteer for Health Education Program for high school students   Aug. 2021 – Aug. 2022

AWARDS

- Silver Medal, International Genetically Engineered Machine (iGEM) 2023 DKU Team   Nov. 2023
  o Developed team wiki page independently.
  o Created a markdown editing website for easy collaboration.
- Champion, One-Kilometer Run, Physical Fitness Test (2022)   Oct. 2022
- Dean's List (Fall 2021 & Fall 2022) and Dean's List with Distinction (Spring 2022 & Spring 2023)
- 75% Tuition Scholarship for Undergraduate Program: UGRD Entrance Scholarship, JF Progressive Scholarship

SKILLS

- **Languages**
  o English (fluent) with TOEFL score of 107, Mandarin (native)
- **Programming Languages**
  o Python, Java, JavaScript, SML-NJ
- **Frameworks and Tools**
  o PyTorch, Django, Vue, MySQL