

# YIYANG NAN

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## EDUCATION

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### Brown University

M.S. in Computer Science

Providence, RI

May 2024 (Expected)

### University of Michigan - Ann Arbor

B.S. in Data Science, Statistics, Mathematics of Finance

Ann Arbor, MI

Dec 2021

## PUBLICATIONS AND MANUSCRIPTS

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### Preprints

Weiguo Pian, **Yiyang Nan**, Shijian Deng, Shentong Mo, Yunhui Guo, Yapeng Tian. "Continual Audio-Visual Sound Separation"

Tianyu Yang, **Yiyang Nan**, Lisen Dai, Zhenwen Liang, Yapeng Tian, Xiangliang Zhang. "Audio-Visual Question Answering with Semantic Guidance".

Shijian Deng, Erin E. Kosloski, Siddhi Patel, Zeke Aharon Barnett, **Yiyang Nan**, Alexander Kaplan, Sisira Aarukapalli, William T. Doan, Matthew Wang, Harsh Singh, Pamela R Rollins, Yapeng Tian. "Hear Me, See Me, Understand Me: Audio-Visual Autism Behavior Recognition".

### Conference Papers

Nihal Nayak, **Yiyang Nan**, Avi Trost, Stephen Bach. "[Learning to Generate Instruction Tuning Datasets for Zero-Shot Task Adaptation](#)". *ACL Findings*, 2024

### Journal Papers

Hanrui Zhang, Ziyang Wang, **Yiyang Nan**, Bulat Zagidullin, Daiyao Yi, Jing Tang, Yuanfang Guan. "[Harmonizing across Datasets to Improve the Transferability of Drug Combination Prediction](#)". *Communications Biology*, 2023.

## RESEARCH EXPERIENCE

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### BATS Lab, Brown University

Advisor: Prof. Stephen Bach

Providence, RI

Sep. 2022 – Present

Researched algorithms for language model decoding time tuning, examining how small proxy models can impact the logits output of larger models.

Researched the generation of synthetic instruction-tuning data conditioned on specialized domain context and task type attributes.

Participated in [2022 DARPA AI for Critical Mineral Assessment Competition](#) and developed an adapted CLIP model with visual prompts to extract map features based on USGS map legend symbols.

### CVMC Lab, University of Texas - Dallas

Advisor: Prof. Yapeng Tian

Dallas, TX

Mar. 2023 – Present

Collaborated on introducing continual learning problem in the context of audio-visual sound separation and investigated its issue of catastrophic forgetting.

Designed a network with source-wise learnable tokens to disentangle sound sources, extract semantically representations from inputs, and enhance performance in the Audio-Visual Question Answering

Introduced the most extensive dataset currently available for recognizing autism-related behaviors in children; Conducted benchmarking across various foundation models.

**Guan Lab, University of Michigan**

Advisor: Prof. Yuanfang Guan

Ann Arbor, MI

*Aug. 2021 – May 2023*

[Ranked in 3rd place in 2022 Heart Failure: Microbiome FINRISK DREAM Challenge](#); Utilized a non-parametric ranking to transform the host phenotype data and modeled the survival risk for heart failure with ensembles of kernel-based and tree-based models.

[Ranked in 4th place in 2022 Cough Diagnostic Algorithm for Tuberculosis \(CODA TB\) DREAM Challenge](#); Designed an LightGBM based approach with engineered cough sounds audio features and clinical information to predict the presence of Tuberculosis.

Participated in [2022 NeurIPS Weakly Supervised Cell Segmentation data challenge](#); Implemented the pipeline of Mask-RCNN with customized non-maximum suppression for whole-slide cell segmentation.

Proposed the standardization for the different concentration settings in different studies enables pharmacodynamics of monotherapies in machine learning models.

## SKILLS

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**Programming:** Python (Proficient), R (Proficient), C++ (Intermediate), Java (Basic), SQL (Basic)

**Languages:** English (Fluent), Mandarin (Native)