# JUNTONG NI

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## Education

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| **Shandong University** | **Sep. 2020 – present** |
| *Undergraduate of Artificial Intelligence, GPA: 91.96, Rank:3/52* | *Qingdao, Shandong* |

## Relevant Coursework

- Advanced Math 96
- Linear Algebra 99
- Probability 98
- College Physics 99
- Deep learning 95
- Machine Learning 93
- Information Retrieval 100
- Practices on AI 95

## Research Interest

1) **Multimodal Deep Learning:** My interest lies in developing deep learning systems that can handle multiple modalities, with a focus on vision-language tasks such as sentiment analysis and generation tasks such as multimodal summarization.

2) **Causal Effect:** I want to apply causal inference methods to tasks that involve multiple modalities.

3) **Natural Language Processing:** Interested in language understanding, data-to-text generation, and knowledge injection.

4) **AI + Bio:** Interested in deep learning-based methods for biology and medicine.

## Research Experience

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| **iLearn Lab, Shandong University** | **December 2021 – present** |
| *Research Assistant, supervised by Prof. Liqiang Nie* | *Qingdao, Shandong* |

- In SDU, I actively researched multimedia computing, cross-modal information retrieval, and debiasing.
- I participated in two projects related to causal effect and one project about language understanding.

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| **University of Science and Technology of China** | **April 2022 – June 2022** |
| *Research Assistant, supervised by Prof. Fuli Feng* | *Hefei, Anhui* |

- In USTC, my research interests lie in deep learning-based methods for biology and medicine.
- We focus on the problem of predicting neoantigens. To investigate the technical context of neoantigens prediction.
- Then, I used TransPHLA, a peptide-HLA binding prediction method, to conduct some further experiments.

## Publications

**General Debiasing for Multimodal Sentiment Analysis.**

*Teng Sun, **Juntong Ni**, Wenjie Wang, Liqiang Jing, Yichen Zheng, Liqiang Nie. Under Review by ACM SIGIR, 2023.*

- This work is to study the problem of bias in all three modalities of text, audio, and video in multimodal sentiment analysis. I participated in most of the paper writing and experimental implementation work.

**Muti-modal Emotion Recognition via Hierarchical Knowledge Distillation.**

*Teng Sun, Yinwei Wei, **Juntong Ni**, Zixin Liu, Xuemeng Song, Yaowei Wang, Liqiang Nie. Under Review by IEEE TMM*

- The work is to study how the text in multi-modal emotion recognition assists the learning of audio and video. I participated in implementing experiments and writing some parts of papers, such as experiments.

**Counterfactual Reasoning for Out-of-distribution Multimodal Sentiment Analysis.**

*Teng Sun, Wenjie Wang, Liqiang Jing, Yiran Cui, Xuemeng Song, Liqiang Nie. (**participate**) ACM MM 2022.*

- The work argues the problem of bias in text modalities in multi-modal sentiment analysis. I reproduced the results of baselines of the multi-modal sentiment analysis task and trained them on the OOD datasets we built to evaluate their generalization ability. In addition, I also did some case studies to evaluate the robust performance of our proposed model.

## Projects

**Short Text Clustering** | *Python, Pytorch* **January 2023**
- Analyzing short texts infers discriminative and coherent latent topics, which is a significant and essential problem because many real-world applications require a semantic understanding of short messages.
- I wrote a survey of short text clustering. I reviewed all available short text topic modeling strategies in-depth. With examples of representative techniques, I offer four kinds of methods based on similarity, topic model, deep learning, and generative adversarial networks.
- I also proposed a method named improved supporting clustering with contrastive learning (ISCCL). The key to the improvement is that I add a cluster-level head to leverage cluster-level contrastive learning to promote better feature separation.
- Github Url: https://github.com/juntongni/ISCCL

**Restaurant+ Food Identification and Nutrition Analysis System** | *Python, JavaScript* **January 2023**
- Employed YOLOv5 for food identification and got the price of the identified food based on external knowledge.
- Trained ResNet on the Nutrition5k dataset to predict the nutrients such as calories;
- Generated corresponding evaluation and diet suggestions by ChatGPT based on the prediction results.

**Interactive Visualization of Worldwide ShipWreck** | *JavaScript, HTML, CSS* **December 2022**
- Developed a visualization dashboard using JavaScript to achieve interaction between users and the dashboard.
- Implemented Leaflet to provide zoomable, movable map modules to facilitate shipwreck analysis.
- Github Url: https://juntongni.github.io/project/vis/

## Technical Skills

**Languages**: Python, C++, C, LaTeX, HTML/CSS, JavaScript, SQL
**Developer Tools**: Linux, GitHub, VS Code, Xcode, Google Colab, Jupter
**Deep Learning Tools**: Pytorch, Tensorflow

## Extracurricular

**Dandelion Love Support Education Association** **Spring 2021 − Summer 2021**
*Member* *Shandong University*
- We taught at a high school summer camp in Zhenyuan, Guizhou for a week in 2021. We explored the tourism and environmental issues of rural areas in Guizhou Miao and Dong Autonomous Prefecture.
- On this trip, I taught kids and learned from them. They helped me grow and understand rural revitalization.

**"Shandong University Cup" Badminton Men's Doubles Champion** **Spring 2022**

## Selected Prize

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| **Zhiyang Scholarship (10 awardees per year in department)** | **Winter 2022** |
| **Huawei Smartbase Scholarship (Only 35 awardees per year in SDU)** | **Fall 2022** |
| **First Class Scholarship (Top 5% student)** | **Fall 2022** |
| **COMAP Mathematical Contest in Modeling (Honorable Mention)** | **Spring 2022** |
| **Asia and Pacific Mathematical Contest in Modeling (Second Prize)** | **Winter 2021** |
| **National University Mathematics Competition (Third Prize)** | **Winter 2021** |