

# Tianyang Zhao

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## EDUCATION

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### Pennsylvania State University, University Park, PA

Ph.D. Informatics, Advisor: Dr. Shomir Wilson, GPA: 3.96/4.00

Anticipated: May 2027

### Pennsylvania State University, University Park, PA

M.S. Computer Science and Engineering, Advisor: Dr. Rui Zhang, GPA: 3.69/4.00

August 2022

### Pennsylvania State University, University Park, PA

B.S. Computer Science, minor in Psychology, GPA: 3.93/4.00

May 2020

## RESEARCH INTERESTS

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▪ Natural Language Processing    ▪ Artificial Intelligence    ▪ Machine Learning    ▪ Privacy

## PUBLICATIONS & PROFESSIONAL SERVICES

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### Publication

- Bandyopadhyay, S., **Zhao, T.** (2020). Natural Language Response Generation from SQL with Generalization and Back-translation. In *Proceedings of the First Workshop on Interactive and Executable Semantic Parsing (at EMNLP 2020)*.

### Peer Reviewer

▪ EMNLP 2023 Industry Track    ▪ EMNLP 2022: 3 submissions    ▪ NAACL 2022: 1 submission

### Professional Membership

Association for Computational Linguistics

November 2020 – Present

- Presented my publication at the First Workshop on Interactive and Executable Semantic Parsing of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP 2020).

### Schloss Dagstuhl

June 2024 – Present

- Attended Dagstuhl Seminar *Grand Challenges for Research on Privacy Documents*. Identified challenges, research questions, and solution ideas for creating, annotating, and analyzing large-scale research documents.

## RESEARCH EXPERIENCE

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### Privacy Questions Elicitation by Generative Large Language Models

Pennsylvania State University

June 2024 – Present

- Compared privacy questions from large language models acting as people with different ages and genders.

### PrivaSeerQA: A Large-Scale Corpus of Question-Answer Pairs from Privacy Policies

Pennsylvania State University

August 2022 – Present

- Collected questions and responses in privacy policies with an automated approach.
- Developed question-answering systems with various language models, some of which achieving state-of-the-art performance, to show the usability of the corpus and the effect of its large scale.
- Compared the privacy questions addressed in policies and those the general public is most interested in.

### Robustness and Augmentation with Universal Adversarial Triggers on Dialogue State Tracking

Pennsylvania State University

May 2021 – June 2022

- Analyzed how Universal Adversarial Triggers influence performance of TripPy on Dialogue State Tracking.
- Investigated if augmenting data with these triggers can improve TripPy's performance.

## **Efficient Sub-Pixel Convolutional Neural Network for Spectrum Image Processing**

Pennsylvania State University

December 2020 – May 2021

- Reviewed related literature to find approaches for pattern recognition.
- Implemented these ideas, ran analysis experiments, and evaluated their accuracy as well as efficiency.

## **Adversarial Machine Learning with SQL-to-Text Translation**

Independent Research Project

May 2020 – August 2020

- Improved the robustness of a model by training with extra adversarial data.
- Identified common types of noise and generated noisy datasets corresponding to each type.
- Designed various character perturbations and compared effects on original and noisy datasets.

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## **SELECTED PROJECTS**

### **New York City Pick-up and Drop-off Demands Prediction Tool**

- Built a web application using HTML for front-end web pages and Flask for the back-end interactions.
- Carried out data analysis to clean the data, discover useful features, and generate visualizations.
- Compared various approaches: random forest, nearest neighbors, ARIMA, and linear regression with Lasso.

### **CanvasPath: A Course Management System with Database Support**

- Conducted requirement analysis to find out the expected functionalities and the best suited development tools.
- Designed a database to capture the requirements, expressed by an entity relationship diagram.
- Implemented the system as a web application with different interfaces for various types of users.

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## **SKILLS**

- Selected Deep Learning Python Libraries: PyTorch, Keras, TensorFlow, scikit-learn, Transformers
- Selected Data Processing Python Libraries: NLTK, NumPy, Pandas, matplotlib, SciPy
- Large Language Model Frameworks: Ollama, LitGPT, LangChain
- Programming Languages: Python, Matlab, C, Java, C++
- Web Development: SQL, HTML, JavaScript, CSS, Flask
- Miscellaneous: LaTeX, Git, Jupyter Notebook

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## **TEACHING EXPERIENCE**

### **Teaching Assistant, Pennsylvania State University, College of IST**

Intermediate & Object-Oriented Application Development

August 2022 – December 2022

### **Teaching Assistant, Pennsylvania State University, Department of CSE**

Data Structures and Algorithms

August 2021 – May 2022

Discrete Math for Computer Science

January 2021 – May 2021

Programming and Computation I: Fundamentals

August 2020 – December 2020