XINYUAN TU

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EDUCATION

Friedrich Alexander Universität Erlangen Nürnberg (FAU) *Aug 2025 (expected)*
M.S. in Artificial Intelligence (Minor Mathematics)
GPA: 1.7/1.0
Related courses: Ontology, Semantic Web, Large Language Models.

Nanchang Hangkong University (NCHU) *May 2022*
B.E. in Software Engineering
GPA: 85/100
Related courses: Software Engineering, Software Testing, Web Development.

Belarusian State University of Informatics and Radioelectronics *May 2022*
Dual Degree
Related courses: Distributed System, Database.

RESEARCH INTERESTS

I am interested in **Large Language Models** and **ontology Learning**, especially in cooperating language model for knowledge representation and reasoning. Besides, I am also interested in foundation models and reliable conversational AI.

RESEARCH EXPERIENCE

Ontology Construction with Large Language Models Jan 2025 - July 2025
Supervisors: Prof. Andreas Maier, Dr.Tomás Arias, and Simon Baeuerle Robert Bosch

- Proposed pipelines for ontology constructions from industrial literature and meeting transcriptions via agent prompting.
- Proposed an LLM-as-Judger to evaluate ontology generation ontology.
- Obtained models with 95% accuracy, 65% completeness and 50% conciseness.

Data Scientist Intern Oct 2024 - Jan 2025
Stuttgart Gen AI group, Robert Bosch

- Conducted research on foundation model for power module images, thermal interface crack detection and segmentation.
- Leveraged multi-modal language models to annotate crack images in manufacturing process.
- Built web UIs for power module image manipulation.
- Deployed model at Cloud infrastructure (Databricks), allowing online processing.

Research Assistant Oct 2023 - Feb 2025
Supervisor: Prof. Bernhard Kainz IDEA lab, FAU

- Generated a 2D orgam MRI images via Diffusion Model, enhancing data augmentation for downstream segmentation F1 by 3%.
- Re-implemented anomaly detection baselines and achieved 97.1 % AUROC on the MvTec dataset with normalizing flow.
- Organized Weely Q&A sessions for lecture “Algorithm, Programming and Data Representation” (avg. 45 students)

Few-shot Learning for Industrial Time Series Analysis [1] Oct 2023 - Feb 2024
FAPS, FAU

- Applied metric-based and optimization based few-shot models for screw-fastening dataset
- Achieved an average of 92% F1 score under 10-shots-3-ways with MAML and prototypical network, the ideal performance for real industrial usage.
- Fine-tuned a time series foundation model for FSL, achieving at least 85% F1 score under 10-shots-3 ways.

PUBLICATIONS

[1] X. Tu, H. Zhang, T. Chengxu, and Z. Chen, "Few-shot learning for industrial time series: A comparative analysis using the example of screw-fastening process monitoring," *arXiv preprint arXiv:2506.13909*, 2025.

NON-RESEARCH EXPERIENCES

Teaching Assistant April 2024 - Feb 2025
KWRAC Group, FAU

- Give tutorial on lecture Artificial Intelligence I and II.
- Teaching topics in Artificial Intelligence I: Search and adversarial search, CSP, SAT problem, formal languages, ontology.
- Teaching topics in Artificial Intelligence II: Baysian Network, Hidden Markov Model, traditional machine learning and statistical learning.

ACHIEVEMENTS

Campus Scholarship (grade 2), awarded by NCHU	*Fall 2019*
Campus Scholarship (grade 2), awarded by NCHU	*Fall 2020*
Second Prize in C/C++ Programming Competition, awarded by Langqiao	*Fall 2020*

SKILLS/HOBBIES

Programming Languages	Python, C, MATLAB, HTML, Java, Javascript
Machine Learning Tools	Pytorch, Tensorflow, Sklearn, Pandas, Numpy
Utility Tools	Git, Github Action, Linux, Docker
Hobbies	Schuba Diving, Swimming, Fitness Studio, Hiking
Languages	Chinese: Native, English: C1, German: A2

REFERENCES

Prof. Andreas Maier	Professor at FAU, Germany. Email: andreas.maier@fau.de
Prof. Micheal Kolhaze	Professor at FAU, Germany. Email: micheal.kolhaze@fau.de
Dr. Tomas Adrias	Researcher at FAU, Germany. Email: tomas.arias@fau.de
Dr. Simon Bäuerle	Data scientist at Robert Bosch. Email: simon.baeuerle@bosch.de