

# **Yin-Chien Pai (Eszter Pai)**

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## **Continental Automotive**

Master Thesis

Berlin

Feb 2025 - Dec 2025

### Language Conditioned Promptable Traffic Scene Generation

- Developed an automated evaluation loop that boosted scenario diversity by up to 30%, especially in safety-critical cases (e.g., emergency scenarios), leading to broader edge-case coverage in autonomous driving simulation.
- Improved the retrieval module by ~70% through integrating a lightweight LLM-based judge model, significantly increasing the accuracy of map layout selection in the scenario generation pipeline.
- Replaced proprietary LLMs (e.g., Open AI) with open-source alternatives (LLaMA, DeepSeek)

## **Project**

### Chat Bot with Zero-Shot Classification, RAG & Multi-Model NLP Pipeline

- Engineered a hybrid classification system combining Toxic-BERT and Zero-Shot classification models, reducing API calls by pre-screening messages before LLM inference.
- Implemented RAG system using ChromaDB to provide context-aware responses, enabling the bot to distinguish between in-game content and real-world toxicity.
- Built a persistent user reputation system with SQLite, tracking user behavior across sessions and dynamically adjusting detection sensitivity based on user history.

## **Universität Potsdam**

*Grade 1,6*

Master of Science, Cognitive Systems: Language, Learning and Reasoning

Potsdam

Sep 2022 - present

### Fine-Tuned LLMs for Higher-Order Code Generation in COCOBOTS domain.

- Fine-tuned LLMs, including the LLaMA family and Mistral, for advanced code generation tasks within the COCOBOTS domain.
- Leveraged Unislot for quantization and LoRA (Low-Rank Adaptation) techniques to optimize parameters and reduce resource requirements.

### Designed Dungeon and Dragon Inspired Text Game for Evaluating Chat-Optimized LLMs.

Evaluated LLM performance based on rule adherence and gameplay intelligence, offering insights into the models' decision-making and contextual understanding.

Other modules taken: Advanced Natural Language Processing, Computer Science, Machine Learning and Data Analysis, Atelier in Experimental and Computational Phonology, Cognitive and Sensorimotor Development.

## **Hasso-Plattner-Institut**

Student Assistant

Potsdam

Nov 2023 - Jan 2025

- Created a comprehensive extreme weather dataset to facilitate accurate evaluation and analysis.
- Integrated the extreme weather dataset into a cyclone tracker.

## **National Cheng-Chi University**

*Grade 1,3*

Bachelor of Arts, English Language and Literature

Taipei

Sep 2019 - Aug 2022

Modules taken: Algorithms, Programming 101, Computational Thinking, Deep Learning Applications, Calculus, Statistics.

## **Frankfurt School of Finance and Management**

Exchange Semester

Frankfurt am Main

Sep 2021 - Jan 2022

## **Skills**

Language: Mandarin (Native), English (C1, IELTS 7.5), German (B2).

Skills: API, BERT, ChromaDB, Docker, Fine-Tuning, HPC, Latex, Linux, LLMs, LoRA, matplotlib, NLTK, NLP, NumPy, Ollama, OpenAI, Pandas, Prompt Engineering, Python, PyTorch, RAG, Regex, SQLite, scikit-learn, Sloth, SpaCy, TensorFlow, Transformers, Zero-Shot