Neng Xu

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EDUCATION

University of Zurich, Faculty of Business, Economics and Informatics Zurich, Switzerland

MSc in Informatic Major: Data Science Minor: Informatic *2021.9-2024.10(expected)*

- **GPA:** 5.5 /6.0 (Very Good)

Beijing Normal University (BNU), School of Mathematical Sciences Beijing, China

BSc in Mathematics and Applied Mathematics *2017.9–2021.7*

- **GPA:** 3.34/4.0

INTERNSHIP

IPSOS (CHINA) CONSULTING CO ., LTD Beijing, China

Data Analyst *2019.9–2020.8*

- Responsible for the brand's new product launch and simulation of purchase intention testing, with key tasks including **user persona selection (SQL)** on the "Tmall New Product Innovation Center" platform.
- During the internship, independently completed crowd research, custom-imported multiple groups of people, systematically generated crowd profiles, performed **statistical significance** feature comparison analysis, extracted the main behavioral profile tags of the target crowd, Additionally, independently built simulated product detail pages for different product concepts, targeted specific user groups, and recorded their behavior and attitudes.

RESEARCH EXPERIENCE

Efficient Query Maintenance using Maximal Hierarchical Subqueries *(Master Thesis)* *2023.7 -2024.6*

- For traditional **query optimizers** in relational databases, designed the **IsHier** algorithm to identify the largest q-level hierarchical subqueries. By splitting non-hierarchical queries into hierarchical parts, it ensures a linear update rate, addressing the core issue of finding the optimal variable order in **Factorized Incremental View Maintenance (F-IVM)**. The **IsHier** algorithm was integrated into F-IVM using **Flink**.
- For processing **Free-Connex Acyclic** queries in the **TPC-H dataset**, a new hybrid approach based on **IsHier** was proposed. This approach provides a practical solution for databases facing constant update time constraints, achieving a 20% improvement in query response speed while ensuring a constant update rate.

Musemate -- innovative, interactive AI-based music generation platform *2023.1 – 2023.7*

- Mainly responsible for optimizing the training of the Google Magenta **Polyphony RNN** model (based on **LSTM**) to enable it to model multiple simultaneous notes and generate complex polyphonic music. This involves composing the current measure to predict subsequent notes and generate complete compositions.
- Developed a web-based visualization interface using **React** for the frontend and **Node.js** for the backend. Created a web application architecture using **Docker** and set up a **CI/CD** pipeline with **GitLab** that includes automated testing. This setup allows users to browse and edit different measures, extend the length of the song, and select different instruments for playback.

Movie Chatbot – IMDB-Based Movie Knowledge Q&A Bot *2022.9-2023.1*

- Developed an AI agent program based on the **Wikidata dataset** and a pre-trained Transformer model to answer various types of natural language questions. The research compared two approaches: traditional query answering and **LLM-based** methods.
- The traditional approach used the IMDB dataset to fine-tune a Named Entity Recognition (**NER**) model for identifying movie-specific terminology and querying answers through **knowledge graph.** The LLM approach involved **fine-tuning** the MovieChat model from **Huggingface**.

LEADERSHIP & VOLUNTEER EXPERIENCE

Director, Association of Mental Health (Student Affairs), BNU *2018.9-2019.7*

Volunteer, International Graduate Scholarship Fair (IGSF) *2019.11-2019.12*

OTHER

Languages: Mandarin (Native), English (Proficient), German (Conversational)

Skills: Proficient in data science toolkits (including scikit-learn, PyTorch),
proficient in Python, SQL, knowledge graphs, CSS; familiar with C, C++