MINGZE LI

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SUMMARY

Human-centered AI & HCI for the workplace with a strong background in Information Systems. In my work, I design, implement, and empirically evaluate **domain-specific intelligent assistants and decision-support systems** from **generative mental health chatbots** to **operator-support tools**, with a focus on human well-being, productivity, and expert-in-the-loop adaptation and competence development for effective GenAI use.

FOCUS AREAS

Human-centered generative AI at work: organizational adoption, employee productivity & well-being.
HCI & Information Systems: interactive intelligent systems, UX, and socio-technical evaluation.
NLP & LLMs in domain-specific contexts: RAG, KG integration, prompt engineering, multi-agent debate;
Data-driven evaluation: DSR, lab/field experiments, biosignals & behavioral data for user state and performance.

PUBLICATIONS

[1] **Li, M.**, Yang, H., Liu, Z., Alam, M. M., Sack, H., & Gesese, G. A. (2024). **KGMistral: Towards boosting the performance of large language models for question answering with knowledge graph integration**. In Workshop on Deep Learning and Large Language Models for Knowledge Graphs.

[2] Hofmann, J., Schweickart, L., Zimmermann, C., **Li, M.**, Below, J., Schmieder, A., ... & Stork, W. (2025, June). **Perfusion Analysis for Telemedical Long-Term Monitoring of Patients with Chronic Skin Diseases**. In *2025 6th International Conference in Electronic Engineering & Information Technology (EEITE)* (pp. 1-6). IEEE.

EDUCATION

10/2020 – 04/2025 **Information Systems (M.Sc.)**
Karlsruhe Institute of Technology, Karlsruhe, Germany
Thesis: *Designing an Iterative Prompt Optimization System for Domain-Specific Chatbots*
(Grade: 1.7)

09/2015 - 06/2019 **Information Management and Information Systems (B.Sc.)**
Qilu University of Technology, Jinan, China **(GPA: 3.89)**

RESEARCH & INDUSTRY EXPERIENCE

11/2024 – 04/2025 **Master thesis -** *Designing an Iterative Prompt Optimization System for Domain-Specific Chatbots* **(H-Lab, KIT)**

- Designed and implemented an iterative **multi-agent debating** system to refine prompts for a mental-health support chatbot.
- Grounded the system in **Design Science Research** with design principles based on **Cognitive Load Theory** and Adaptive Structuration Theory.
- Automated synthetic dialogue generation and **GPTScore-based evaluation**, with domain experts in the loop via an interactive web interface.
- Conducted a mixed-methods user study (experts & lay users, **PHQ-9, NASA-TLX, qualitative feedback**) and derived prescriptive design implications.

11/2023 – 03/2024 **Behavioral Activation Chatbot (H-Lab, KIT)**

- Developed a **behavioral activation chatbot** using a **Retrieval-Augmented Generation** (RAG) pipeline and a **fine-tuned** GPT-3.5 model.
- Implemented mood tracking, personalized activity recommendations, four incentive mechanisms, and schedule management via **Google Calendar API** to support sustained engagement.
- Ran a SurveyMonkey **user study** (n = 25) to evaluate usability, mood-tracking accuracy, and impact on BA, showing overall positive effects on users' self-management and well-being.

11/2023 – 03/2024 **Engineering Interactive Systems and EIS Capstone Project (H-Lab, KIT)**

- Collected multimodal data (i.e., **eye-tracking**, **HR**, **PPG**, **accelerometer**, mouse click and movement data) on an **ABB** operator-training simulator to study workload and performance in a realistic workplace.
- Designed analyses and visual reports to give operators and supervisors feedback on **stress, attention, and performance**.
- Prototyped a **biosignal-adaptive smartwatch interface**, exploring how physiological data can be integrated into everyday work to support safer and more efficient operation.

11/2023 – 03/2024 **Boosting the Performance of LLMs for QA with Knowledge Graph Integration [1] (KIT)**

- Implemented entity/relation extraction from questions and **SPARQL** over domain **KG**.
- Verbalized relevant triples and processed prompt engineering.
- Evaluated with **SBERT** similarity, **ROUGE**, and **BLEU**.
- Improved factuality and grounding of our pipeline named **KG-Mistral** vs. other baselines.

11/2021 – 03/2022 **Representation Learning on Knowledge Graphs, KIT, Karlsruhe**

- Fine-tuned **KG-BERT** on popular datasets (i.e., Freebase, WordNet, Wikidata)
- Evaluated triple-classification and link-prediction performance.

07/2024 - Present **HiWi, FZI Forschungszentrum Informatik Karlsruhe**

HybridVITA Project [2]

07/2024 - 06/2025

- Data Preprocessing and Data Augmentation for dermatology images.
- **FCN Model** Fine-tuning for **Skin and Psoriasis Mask Segmentation**.
- Pipeline for ArUco Marker Identification and Psoriasis Area Calculation.
- Clinical handover and result interpretation with clinical and industry partners.

OKTI Project

06/2025 - Present

- Simulated fixational eye movements for dataset generation in retinal **OCT B-scan volumes**.
- Trained and evaluated **3D U-Net** with CBAM for motion artifact correction.

INDEPENDENT PROJECTS

- **Skin Health Consulting:** integrated GPT-3.5 with a CNN for skin-cancer image classification (independent, non-commercial code prototype for HiWi interview at FZI).
- **Word2MP3:** converted EN–ZH vocabulary into MP3 files to practice pronunciation and to increase UX.

SKILLS

- **Programming**: Python, **PyTorch**, NumPy/Pandas, OpenCV; SQL, SPARQL; Java, REST APIs.
- **Trustworthy ML**: distribution shift, uncertainty & calibration, reliability evaluation.
- **NLP & Agents**: RAG, KG, prompt engineering, multi-agent debate, GPTScore, human-rating protocols.
- Experience with **Design Science Research** and evaluation of human-AI systems in sensitive domains (mental health, clinical decision support).
- **Human-in-the-loop & expert-centered design**: close collaboration with clinicians and domain experts, which translates well to collaboration with employees and managers in companies.
- **Collaboration/HCI**: clinician/user studies, reports/visuals, reproducible pipelines, lightweight expert UIs.
- **Medical Imaging & Multimodality**: **CV Models** (e.g., U-Net, FCN); **Biosignals** (e.g., HR, rPPG).

LANGUAGES

- English (C1)
- German (C1)
- Chinese (Native)