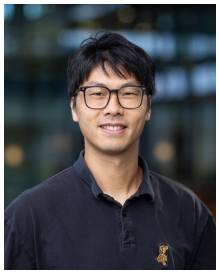

Mengzhu Xu (Duke)

Eindhoven, Netherlands | mengzhuxu@163.com | +31 0641633309

Senior AI Engineer | Algorithm Engineer (Healthcare AI Systems)

Profile

- AI Engineer with 7+ years of experience across healthcare, automotive, and enterprise AI applications, focusing on building deployable and scalable AI systems.
- Experienced in end-to-end machine learning workflows, including model development, optimization, and deployment in real-world environments.
- Strong focus on efficient AI, system-level optimization, and real-time inference in practical applications.

Education

Eindhoven University of Technology, PhD in Electrical Engineering 2023 – Present

- Biomedical Signal Processing in edge devices (Sleep and Circadian)
- Optimized trade-offs between accuracy, latency, and energy consumption for resource-constrained environments.

Eindhoven University of Technology, MSc Electrical Engineering 2017 – 2019

- GPA: 8.5/10, Thesis: 9/10
- Master thesis: Early prediction of necrotizing enterocolitis in preterm infants using machine learning. (Philips)

Shanghai Maritime University, BSc Electrical Engineering 2013 – 2017

- Cum laude, Exchange at HZ University of Applied Sciences

Work Experience

AI Solutions Consultant, Fusion Consulting (Remote) 2024.06 – 2025.12

- Designed and deployed AI systems for healthcare and compliance use cases, covering full lifecycle from problem definition to production delivery.
- Built scalable machine learning pipelines, including data processing, model inference, and integration with enterprise systems.
- Optimized system performance for scalability and real-world deployment scenarios.

Senior NLP Algorithm Engineer, NIO Inc. (Shanghai, China) 2022.03 – 2023.09

- Led the deployment of cloud-based NLP models to on-device (in-vehicle) environments, enabling real-time inference under resource constraints.
- Optimized model performance using ONNX-based acceleration and operator-level optimizations, reducing latency and improving inference efficiency on edge hardware.
- Built and maintained production pipelines for NER, text correction, and semantic parsing in conversational AI systems.
- Filed 3 patents (2 granted).

Intelligent Algorithm Scientist, Philips Research Asia (Shanghai, China) 2019.12 – 2022.03

- Developed **machine learning models for healthcare**, including **clinical data processing** and **biomedical signal analysis**.
- Explored **medical image modeling** using **Vision Transformer (ViT)** for CT/MRI segmentation, demonstrating strong performance with **large-scale pretraining + lightweight fine-tuning** compared to U-Net/CNN baselines.
- Built and deployed **clinical terminology standardization models** within Philips' platform, exposing **APIs** and improving top-5 precision from **73% to 94.5%**.
- Designed and deployed **recommendation systems** on cloud (Docker), validated via **A/B testing**, achieving **+50% CTR** with positive impact on DAU and MAU.
- Optimized inference pipelines and system architecture, reducing latency and improving efficiency in real-world clinical applications.
- **5 patents** (3 granted); **Best Paper (OCUPAI 2021)**; **Philips Annual Employee (Top 3/200)**

Skills

- **Machine Learning & Deep Learning & Agentic AI**
- **Medical AI:** Biomedical Signals, Medical Imaging, EEG, ECG, PPG
- **Model Optimization:** Efficient AI, Latency Optimization
- **Production Systems:** Cloud Deployment, APIs, Docker, Pipelines
- **Frameworks:** PyTorch, TensorFlow, HuggingFace, ONNX
- **Programming:** Python, R, SQL, C, JavaScript

Selected Publications

1. **M. Xu**, N. Cabrilo, M. van Gilst, J.-P. Linnartz.
   Toward Real-Time Circadian Phase Estimation with Low Latency from Wearable Sensing Data.
   2026 IEEE Engineering in Medicine and Biology Society (EMBC), 2026.
2. S. Lin, Z. Wang, H. van Gorp, **M. Xu**, M. van Gilst, S. Overeem, J.P. Linnartz.
   SSC-SleepNet: A Siamese-Based Automatic Sleep Staging Model with Improved N1 Sleep Detection.
   IEEE Journal of Biomedical and Health Informatics, 2025.
3. **M. Xu**, C. Papatsimpa, M. van Gilst, J.P. Linnartz.
   Modelling Office Lighting Optimization for Daylight Saving Time Transitions.
   2024 IEEE Sustainable Smart Lighting World Conference & Expo (LS24), pp. 1–4.
4. **M. Xu**, C. Papatsimpa, L. Schlangen, J.P. Linnartz.
   Improving adjustment to daylight saving time transitions with light.
   Scientific Reports, vol. 14, article 15001, 2024.
5. **M. Xu**, C. Tian, J. Ren
   Chinese Medical Concept Standardization from Free-text to ICD10 by Embedding-based Auto-Encoder.
   Philips Research Annual Conference OCUPAI 2021 (Best Paper NLP Track), 2021.
6. E. Fotiadou, **M. Xu**, B. van Erp, R.J.G. van Sloun, R. Vullings.
   Deep convolutional long short-term memory network for fetal heart rate extraction.
   42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2020.

Patents

1 Data Mining Method for Regionalized Courses and Hospital Resource Allocation. US App Nr: 202110594734.7.

2 New Method and Software for Medical Terminology Standardization. EU App Nr: 202110872803.6.

3 A System for Checking the Correctness of Natural Language Understanding Modules for Parsing Negative Prefix Claims in Dialogue Systems. CN App Nr: NR20220900320.

4 A multimodal data-based pedal mis-touch detection system for automobiles. CN App Nr: NR20221000268.

5 Method for detecting whether a LLM is trained on predefined datasets. CN Patent Publication No.: CN117892100A.

Languages

English (Professional), Chinese (Native), Dutch (Basic)