

THOMAS DETHMANN

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WORK EXPERIENCE

ML Research Engineer - Speech Technologies

Fraunhofer, Institute for Intelligent Analysis and Information Systems

📅 since Jan. 2023

📍 Sankt Augustin/Düsseldorf, Germany

- Develop multi-modal large language models integrating speech and text for ASR, spoken question answering, and translation. Published at ITG Berlin 2025
- Develop an LLM/ASR-based video summarization pipeline for the Lamarr Institute
- Design and implement data augmentation pipelines to scale training datasets for production ASR systems, i.e. air-traffic control scenarios and fine-tuning Whisper models
- Investigate the impact of speech enhancement on ASR
- Develop prompt engineering strategies for data generation / extraction for LLM fine-tuning as part of the MWL project
- Fine-tune translation models in multiple languages for a major German broadcaster
- Research state-of-the-art post-error-correction approaches (incl. Transformers and LLMs) for an EU-wide research project called SELMA
- Maintain internal dataset processing package used across research teams for reproducible ML workflows

Audio DSP / ML Engineer Intern

Brainworx Audio GmbH

📅 Apr. 2022 – Sept. 2022

📍 Langenfeld/Düsseldorf, Germany

- Contributed to hardware modeling of analog audio equipment (Dallas Rangemaster)
- Implemented ML-based instrument classifier as part of DSP research team, integrating machine learning into consumer-facing audio applications
- Was in charge of model deployment from Tensorflow / Pytorch to C++

Machine Learning Engineer Intern

Apple

📅 Feb. 2021 – Dec. 2021

📍 Hamburg/Düsseldorf, Germany

- Developed deep neural network models for automatic drum transcription as part of Master's thesis, enabling intelligent music creation features
- Collaborated with Music Apps engineers / researchers and the product team on ML feature development for music production tools
- Created my own dataset using Python for model training and regularization

Research Assistant / Software Developer

Fraunhofer, Wireless Communications and Networks

📅 Jan. 2020 – Dec. 2020

📍 Berlin, Germany

- Developed a real-time spectrum analyzer for a drone communication system
- Implemented encryption methods and PCM encoding for secure VoIP signal transmission
- Worked on a PCM so that signals can be transmitted via VoIP
- Worked with mangOH Green development board on embedded communication modules

Acoustics Consultant

ISRW Klapdor GmbH

📅 Jul. 2018 – Dec. 2019

📍 Düsseldorf/Berlin, Germany

- Planned the room acoustics of offices, schools, hotels, and concert halls
- Conducted measurements in various settings - reverberation time, sound reduction index of walls/floors/windows, vibrations

Sound Engineer

West German Broadcasting (WDR)

📅 Jun. 2017 – Dec. 2017

📍 Düsseldorf, Germany

- Recorded interviews and selected the necessary equipment for live situations in various acoustical settings in order to ensure a high-quality signal

Drum Set Teacher

Mallet Institute / Plug & Play

📅 May 2015 – Dec. 2017

📍 Düsseldorf/Geldern, Germany

- Taught drum set to students of varying skill levels and age ranges, developing individualized learning strategies

PROJECTS

🔗 github.com/thomaschhh

Sonification (Python, Faust)

Sonification of the RKI COVID-19 dataset where each variable in the dataset steers the sound synthesis.

iPad App (C, Swift, Pure Data)

Synthesizer app that can be used as either a standalone iPad app or using the TouchOSC app.

Study (Python, R)

Impact of COVID-19 on people's listening behavior across the world based on an audio feature analysis using the Spotify API.

MUSIC & AUDIO BACKGROUND

- Formal Education: Drum and band lessons, music theory / history, and ear training; (psycho)acoustics, digital signal processing
- Performance: Making music since age ten (live and in studio), with 3+ years drum set teaching experience.
- Multi-instrumentalist: Advanced drum skills; intermediate bass, piano, and guitar skills
- Audio Production: Professional training in recording, mixing, and sound engineering

SKILLS

Python

Pytorch/Tensorflow

Git

C++

ONNX

AWS/S3

JUCE

Swift



CERTIFICATES

- Studio Acoustics and Monitor Loudspeakers
- Adaption of Room Acoustics to the Requirements of Different Events

AWARDS / PUBLICATIONS

- Award: Distinguished Thesis Award (TU Berlin 2022)
- Paper: Building a German-centric SpeechLLM Using Limited Data (ITG 2025)

SCHOLARSHIPS

Germany Scholarship Program

📅 Dec. 2017 – Dec. 2018

PROMOS Scholarship

📅 Jan. – May. 2018

International Student Scholarship

📅 Jan. – May. 2018

EDUCATION

M.Sc. Audio Communication and Technology

Technical University of Berlin

📅 2019 – Sept. 2022

📍 Berlin, Germany

- Thesis: Automatic Drum Transcription with Deep Neural Networks
- Award: Distinguished Thesis Award (TU Berlin 2022)

B.Sc. Audio Engineering

Lawrence Technological University

📅 Jan – May 2018 (Semester Abroad)

📍 Southfield, MI, USA

- GPA 4.0, Dean's Honor Roll

B.Eng. Audio and Video

University of Applied Sciences

📅 2014 – 2019

📍 Düsseldorf, Germany

- Thesis: *The Influence of Room Acoustical Measures on Subjectively Perceived Parameters*

B.A. English and American Studies & Musicology

Heinrich Heine University Düsseldorf

📅 2012 – 2017

📍 Düsseldorf, Germany

- Thesis: *The Pin-Pen Merger in Oklahoma English: A Perception Study*

LANGUAGES

German

English

French/Spanish



VOLUNTEERING

EDUCAT Germany e.V.

📅 Jun. 2019 - Jun. 2024 – Digital Activation