Professional

Research Scientist Intern 05/2023-10/2023
Meta Reality Labs, USA

- Developing explainable AI for adaptive interfaces via Bayesian Modelling.
- Work submitted to Transactions on Intelligent Interactive Systems

Intern 09/2014-01/2015
Studio Sophisiti, Netherlands

- Working on prototypes of interative systems.
- First iteration of a design that won a red dot design award
- Clients such as Lego, Disney, and Hasbro

Education

Ph.D. - Computer Science 10/2018 - Present
ETH Zürich, Switzerland (Expected: 07/2024)

- Focus on Reinforcement Learning and user modeling.
- Also worked on haptics and novel actuators/sensing.
- Had teaching and supervision duties.
- Supervisor: Prof. Otmar Hilliges

Visiting Scholar 02/2018-10/2018
ETH Zürich, Switzerland

- Focused on Model Predictive Control for Haptic Systems
- Resulted in a demo and paper at UIST.

Summer Intern 05/2017-08/2017
Aalto University, Finland

- Implemented metrics for the automatic evaluation of interface aesthetics
- The metrics were integrated in the Aalto Interface Metrics Server
- The work resulted in a poster at UIST

M.Sc - Computer Science 09/2016-08/2018
Aalto University, Finland
University of Twente, Netherlands

- Received two M.Sc. degrees.
- Specialized in Human-Computer Interaction and Machine Learning
- Minored in Entrepeneurship
- Got awared an excellence scholarship

Exchange - Design 01/2015-06/2015
Carnegie Mellon Unviersity, USA

B.Sc - Industrial Design 09/2012-02/2016
TU Eindhoven, Netherlands

Select Publications

MARLUI: Multi-Agent Reinforcement Learning for Adaptive UIs.
Thomas Langerak, et al.
2024. Proc. ACM Hum.- Comput. Interact. 8

XAIUI: Mental-Model Aware Explainable AI for Adaptive UIs
Thomas Langerak, et al.
2023. Under Submission

Optimal Control for Electromagnetic Haptic Guidance Systems.
Thomas Langerak, et al.
2020. UIST 2020

Thomas Langerak

Ph.D. Graduate
Zürich, Switzerland
e: hello@thomaslangerak.nl
t: +410764493027
Reference Letters on request

google scholar
linkedin
personal website

Skills

Teamwork:
Worked successfully in various inter-disciplinary and multi-cultural teams.

Leadership:
Supervised multiple students with publications as result.

Communication:
Presented at conferences, invited talks and gave lectures. Wrote multiple academic papers.

Problem Solving:
Can think from a design, engineering, entrepeneur and algorithmic perspective.

Machine Learning:
Completed projects involving Reinforcement Learning and Supervised Learning

Technology

Python, PyTorch, SciPY, Numpy, Sensors, Actuators, Prototyping, Unity, Fabrication, CAD, C++

Languages

Dutch: Native
English: Fluent (C2)
German: Basic (B1)

Hobbies

Running, Biking, Bouldering, Reading, Discovering new music, Travelling, Learning

All Publications

Journal

Robust Real-Time Tracking of Axis-Symmetric Magnets via Neural Networks.
Mengfan Wu*, Thomas Langerak*, Juan Zarate and Otmar Hilliges.
2024. To appear in IEEE Transactions on Magnetics.

XAIUI: Mental-Model Aware Explainable AI for Adaptive Interfaces.
Thomas Langerak, Kashyap Todi, Ben Lafreniere, Ruta Desai, and Tanya Jonker.
2023. Under Submission for Transactions on Interactive Intelligent Systems.

Conference

RILe: Reinforced Imitation Learning.
Mert Albaba, Sammy Christen, Christoph Gebhardt, Thomas Langerak, Michael J. Black, and Otmar Hilliges.
2024. Under Review for NeurIPS

MARLUI: Multi-Agent Reinforcement Learning for Goal-Agnostic Adaptive UIs.
Thomas Langerak, Sammy Christen, Mert Albaba, Christoph Gebhardt and Otmar Hilliges.
2024. Proc. ACM Hum.- Comput. Interact. 8

Hedgehog: Handheld Spherical Pin Array based on a Central Electromagnetic Actuator.
Aline Abler, Juan Zarate, Thomas Langerak, Velko Vechev and Otmar Hilliges.
2021. In World Haptics Conference.
Honorable Mention

Omni: Volumetric Sensing and Actuation of Passive Magnetic Tools for Dynamic Haptic Feedback.
Thomas Langerak*, Juan Zarate*, David Lindlbauer, Christian Holz, and Otmar Hilliges
2020. In Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology.

Optimal Control for Electromagnetic Haptic Guidance System
Thomas Langerak, Juan Zarate, Velko Vechev, David Lindlbauer, Daniele Panozzo, and Otmar Hilliges.
2020. In Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology.

Contact-free Nonplanar Haptics with a Spherical Electromagnet
Juan Zarate*, Thomas Langerak*, Bernhard Thomaszewski and Otmar Hilliges.
2020. IEEE Haptics Symposium

Auxiliary: Demos, Posters, and Workshops

Generalizing User Models through Hybrid Hierarchical Control.
Thomas Langerak, Sammy Christen, Anna Feit and Otmar Hilliges
2021. In Reinforcement Learning for Humans, Computer, and Interaction (CHI 2021 Workshop)

A Demonstration on Dynamic Drawing Guidance via Electromagnetic Haptic Feedback.
Thomas Langerak, Juan Zarate, Velko Vechev, Daniele Panozzo, and Otmar Hilliges.
2019. In The Adjunct Publication of the 32nd Annual ACM Symposium on User Interface Software and Technology.

Aalto Interface Metrics (AIM): A Service and Codebase for Computational GUI Evaluation.
Antti Oulasvirta, Samuli De Pascale, Janin Koch, Thomas Langerak, et al.
2018. In The 31st Annual ACM Symposium on User Interface Software and Technology Adjunct Proceedings.

Community Service

Data Co-Chair
2021, 2022 - UIST Organization Committee

- Combine different datastreams into a single database.
- Collaborate with other chairs to find their problems and make sure they have the correct data.

Virtual Experience & Operations Co-Chair
2020 - UIST Organization Committe

- Transition a physical conference into virtual only.
- Investiage needs and solutions for virtual conferences.
- Provide the state of the art for online HCI conferences.

Teaching

Organized Course

Seminar on Computational Haptics — Spring 2020, 2021

Individual Lectures

Human-Computer Interaction: Computational Rationality — Fall 2023
Human-Computer Interaction: (Computational) Haptics — Fall 2021, 2022, 2023
Human-Computer Interaction: Combinatorial Optimization — Fall 2021, 2022
Human-Computer Interaction (Industry): Combinatorial Optimization — Fall 2020

Teaching Assistant

Seminar on Human Performance Capture — Spring 2024
Computer Science I — Spring 2022
Ubiquitous Computing Spring — Spring 2020, 2021
Seminar on Advanced topics in Technical HCI — Spring 2020, 2021
Human-Computer Interaction — Fall 2020-2023
Seminar in Computational Interaction — Spring 2019
Fairness, Equality and Accountability in Machine Learning — Spring 2019

Student Supervision

Yugdeep Bangar. 2024. User Interface Optimization for the Quantified Self.
Together with Alan Hanjalic at TU Delft.

Caroline Sauget. 2022. Deep Reinforcement Learning for Sustainability.

Mengfan Wu. 2021. Electromagnetic Tracking via Deep Learning.
Under review.

Aline Abler. 2021. Building A Hedgehog Pin Array Haptic Interface.
Accepted for World Haptic Conference 2021 & Honorable Mention for Best Paper

Invited Talks

05/2025 UCL, Machine Intelligence Group
04/2024 TU Eindhoven
12/2023 CMU, HCII
11/2022 CMU, Augmented Perception Lab

Reviewing

2024 Transaction on Haptics
2023 CHI, UIST NordiCHI
2022 CHI, UIST, IEEE Sensors, NordiCHI
2021 IEEE Sensors, UIST, CHI
2020 CHI, UIST
2019 UIST

Awards

2021 Honorable Mention - World Haptics
2019 NASA Europa Challenge Finalist
2019 EIT Digital Excellence Scholarship