MARTIN SCHUESSLER

HCI Researcher in Explainable Artificial Intelligence

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RESEARCH STATEMENT

My research lies at the intersection of **Human-Computer interaction** and **Explainable Artificial Intelligence**. I currently investigate how explanation techniques can improve users understanding of highly complex **computer vision** models. I also critically analyse how datasets and models for computer vision are created to make suggestions about more intelligible, value complaint and ethical usage of AI systems. I am a **mixed-methods** researcher, employing a wide range of methods including quantitative methods from Psychology and qualitative methods from Sociology.

PROFESSIONAL EXPERIENCE

PhD Candidate | Research Fellow

Criticality of AI Research Group, Weizenbaum Institute 📅 01/2018 - Ongoing
📍 TU Berlin, Berlin, Germany

As part of a newly formed interdisciplinary research group, my research focuses on empirical studies in the field of explainable artificial intelligence (XAI). I currently conduct human-grounded evaluations of gradient based attribution methods, example-based explanations and invertible neural nets.

- Several interdisciplinary publications with machine learning experts, legal scholars and social scientist
- CSCW '20 Best Paper award for interdisciplinary paper

🔗 https://vernetzung-und-gesellschaft.de

Visiting Researcher

UCL Interaction Centre 📅 08/2019 - Ongoing 📍 Virtual

In a virtual collaboration with my co-supervisor Enrico Costanza, I focus on the user evaluation and potential improvement of explanation algorithms for image classification applications of CNNs.

- Designed a user study evaluating the performance of "saliency maps" together with Ahmed Alqaraawi
- Co-authered IUI '20 full paper

🔗 https://uclic.ucl.ac.uk/

Java Programmer

Osyon GmbH 📅 04/2017 - 01/2018 📍 Berlin, Germany

Java Software development for a Europe-wide operating laboratory group

Student Assistant Researcher

HPI - Stanford Design Thinking Research Program 📅 10/2015 - 09/2016
📍 HPI, Potsdam, Germany

I was part of the Visual Diagnostics Team which is working on developing and evaluating diagnostic instruments for design team interaction.

- Advised the team on evaluation methods and statistical analysis with R
- Facilitated data acquisition and data cleaning by developing and maintaining a data management system

🔗 https://hpi.de/en/dtrp/program/overview.html

Student Assistant Researcher

Mobile and Physical Interaction Group, Q&U Lab 📅 04/2014 - 03/2016
📍 TU Berlin, Berlin, Germany

Under the lead of Prof. Jörg Müller, our group contributed to CHI, UIST, UBICOMP and CSCW.

- Implemented an advanced peephole display on iOS devices
- Designed and conducted 4 small scale studies on peephole displays
- Conducted experiments and contributed to UbiComp '15 full paper
- Taught 40 undergrad students how to code in C

🔗 http://qu.tu-berlin.de/menue/forschung/gruppen/mobile_physical_interaction/

EDUCATION

M. Sc. Computer Science

TU Berlin

📅 04/2013 - 11/2016 📍 Berlin, Germany

- Grade: 1.3 (GPA: 3.8)
- Mayor in HCI (communication-based systems) - courses incl.: usability engineering, multimodal interaction, augmented reality and python for Machine Learning
- Minor in empirical social science - courses incl.: survey methodology, ethnography, and statistics
- Thesis: Spatial Input for 2D Peephole Navigation on Mobile Devices

Study Abroad Program

University of Sydney

📅 07/2010 - 12/2010 📍 Sydney, Australia

B. Sc. Business Informatics

Otto-von-Guericke University

📅 10/2008 - 04/2013 📍 Magdeburg, Germany

- Major in computer science and Minor in economics
- Bachelor thesis published as CHI 2014 paper

SKILLS

Research Methods

Lab Studies   User Research

Online Studies   Literature Surveys

Surveys   Participatory Observations

Qualitative Interviews

Programming

R (tidyverse)   Python   Java   Obj-C

Matlab   SQL   Git

Creative Tools

Video Editing   Rapid Prototyping

Design Thinking

CERTIFICATES

Certificate in Advanced English (C1)

Design Thinking Basic Track

GDPR Specialist (ISQI)

PROFESSIONAL EXPERIENCE

Research and Development Assistant

Telekom Innovation Laboratories 📅 01/2013 - 03/2014
📍 T-Labs, Berlin, Germany

T-Labs innovates in close cooperation with science and industry. Supervised by Mehran Roshandel and Dr. Hamed Ketabdar I enhanced a real time monitoring and outlier detection system (called ADIT).

- Developed and evaluated a new spectral analysis algorithm in Matlab
- Implemented the algorithm in Java as a component for ADIT
- Conducted extensive testing and parameter optimization

🔗 http://www.laboratories.telekom.com/public/Deutsch/Innovation/Pages/Cross-Domain-Middleware.aspx

Graduate Assistant

Department of Simulation and Graphics 📅 06/2010 - 06/2012
📍 Otto-von-Guericke University, Magdeburg, Germany

Working on "Sugar" (One Laptop per Child Human Interface)

IT-Consultant

Self employed 📅 04/2009 - 06/2013 📍 Magdeburg, Germany

Setup and maintenance of e-commerce, content management and database management systems (7 projects)

SELECTED PUBLICATIONS

Between Subjectivity and Imposition: Power Dynamics in Data Annotation for Computer Vision

CSCW '20 – Best Paper Award – Full Paper

M. Miceli, M. Schuessler, T. Yang
📅 10/2020 🔗 http://mschuessler.de/pub/CSCW20.pdf

Evaluating saliency map explanations for convolutional neural networks: a user study

IUI '20 – Full Paper

A. Alqaraawi, M. Schuessler, P. Weiß, E. Costanza, N. Berthouze
📅 03/2020 🔗 http://mschuessler.de/pub/IUI20.pdf

A Taxonomy for Human Subject Evaluation of Black-Box Explanations in XAI

IUI '20 – ExSS Workshop Paper

M. Chromik, M. Schuessler
📅 03/2020 🔗 http://mschuessler.de/pub/ExSS20.pdf

Minimalistic Explanations: Capturing the Essence of Decisions

CHI '19 – Late Breaking Work

M. Schuessler, P. Weiß
📅 05/2019 🔗 http://mschuessler.de/pub/CHI19.pdf

Analyzing Visual Attention During Whole Body Interaction with Public Displays

UbiComp '15 – Full Paper

R. Walter, A. Bullling, D. Lindlbauer, M. Schuessler, J. Müller
📅 09/2015 🔗 http://mschuessler.de/pub/Ubicomp15.pdf

Pinch-drag-flick vs. spatial input: rethinking zoom & pan on mobile displays

CHI '14 – Full Paper

M. Spindler, M. Schuessler, M. Martsch, R. Dachselt
📅 04/2014 🔗 http://mschuessler.de/pub/CHI14.pdf

STRENGTHS

Analytical & Inquisitive

Seven years in research taught me to approach challenging problems methodically and persistently. I constantly strive for new insights and skills.

Teaching

Passionate about facilitating the exchange of knowledge, I acquired the ability to explain complex things in simple words.

Interpersonal and Interdisciplinary Communication

I am an extrovert, who mediates between different jargons in multi-disciplinary teams.

Self-organized and proactive

Working on a dissertation with remote teams worldwide taught me to organise my work needing little supervision.

PASSIONS

- VW T3 Camper Van
- DIY Projects
- Reducing Air Travel

ACADEMIC SERVICE

Reviewer
CHI '20

Program Committee
ExSS Workshop @ IUI '20

Student Volunteer
ITS '14, UIST '18, CHI '19, CHI '20*