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*