Fachgebiet
Quality and Usability Lab

Prof. Dr.-Ing. Sebastian Möller
Quality and Usability Lab
Aims and approach

Goal
Explore future technology and human perception to design quality interactions.

Approach
Comprehensive usability design requires taking viewpoints on three layers.

User
Measuring and modelling usability and perceptual quality

Interface design
Designing the communication interface between user and system

Technology
Multimedia analysis, synthesis and compression
Quality and Usability Lab
Research Groups

Quality
Perception, judgment and prediction of auditory, visual and tactile signals

Dialog
Building and evaluating interactive dialog systems and conversational interfaces.

User Experience & eXtended Reality
Design, analyze and simplify Usability and User Experience evaluation methods for interactive applications.

Data, Security & Trust
Evaluating and modelling the user behaviour with respect to security and privacy related IT-systems.

XPlaiNLP
Apply LLMs for disinformation detection, knowledge enrichment, retrieval augmented generation, the analysis of linguistic patterns and apply XAI and bias detection approaches.

Speech
Build process speech signals, recognize speech and speakers, and estimate speaker traits and states.
Quality and Usability Lab
Team

Quality
• Sebastian Möller
• Robert Spang
• Wafaa Wardah
• Kirill Shchegelskiy
• Tuğçe Kocak

Speech
• Stefan Hillmann
• Sai Sirisha Rallabandi
• Michael Wagner
• Salar Mohtaj
• Wafaa Wardah
• Razieh Khamseh-Ashari
• Charlott Jakob

User Experience & eXtended Reality
• Sebastian Möller
• Tanja Kojic
• Robert Spang
• Maurizio Vergari
• Navid Ashrafi
• Max Warsinke

XPlaiNLP
• Sebastian Möller
• Vera Schmitt
• Salar Mohtaj
• Charlott Jakob
• Premtim Sahitaj
• Ibrahim Baroud
• Lisa Raithel

Dialog
• Stefan Hillmann
• Philine Kowol
• Philipp Harnisch
• Neha Deshpande
• Adnan Ahmad

Data, Privacy & Trust
• Vera Schmitt
• Daniel Conde
• Navid Ashrafi
• Sebastian Möller
Quality and Usability Lab

Team
Quality and Usability Lab

Laborräume
Quality and Usability Lab
Lehrveranstaltungen im WS

Integrierte Lehrveranstaltungen (IV)
4 SWS, 6 ECTS
• Einführung in die Medieninformatik
• Speech Communication
  (Modul: Speech Signal Processing and Speech Technology; in English)
• Communications Acoustics (MOOC)

Vorlesungen (VL)
2 SWS, 3 ECTS
• Computer-supported Interaction (in English)

Colloquium (CO)
• Forschungskolloquium „Usability“

Seminar (SEM)
2 SWS, 3 ECTS
• Usable Privacy (in English)
• Quality and Usability

Studienprojekt (PJ)
2-6 SWS, 3-9 ECTS, 10 ECTS
• Studienprojekt „Quality & Usability“
• Medienprojekt (Modul: Interdisziplinäres Medienprojekt)
Quality and Usability Lab
Lehrveranstaltungen im SS 2024

Integrierte Lehrveranstaltungen (IV)
4 SWS, 6 ECTS
• Usability Engineering (VL+UE)
• Multimodal Interaction (in English, MOOC)
• Digitale Systeme (VL+UE)
• Natural Language Processing (in English)

Colloquium (CO)
• Forschungskolloquium „Usability”

Seminar (SEM)
2 SWS, 3 ECTS
• Quality and Usability
• Biometric Identification and Verification (in English)

Studienprojekt (PJ)
2-6 SWS, 3-9 ECTS, 10 ECTS
• Studienprojekt „Quality & Usability“
• Interdisziplinäres Medienprojekt
• Projekt Medienerstellung
IV Usability Engineering

S. Möller, T. Kojic, D. Conde

**Dates:**
Lecture (VL): Mondays (from 15.04.), **10:00-12:00**
Room: TEL20 - **Auditorium**
Exercise (UE): Tuesday / Friday (depending on the group)

**Content**
1. Motivation and objectives, quality and usability
2. Basics of psychophysics and psychometrics
3. Scaling
4. Usability engineering
5. Quality of voice and audio transmission systems
6. Quality of video transmission systems
7. Quality of speech dialog systems
8. Quality of multimodal systems
9. Quality prediction

A book/eBook is published for the lecture, which covers the lecture and examination material in full. Nevertheless, regular attendance of the lecture and exercises is highly recommended!
IV Usability Engineering
S. Möller, T. Kojic, D. Conde

Exercises
- Planning, implementation and evaluation of a user study
- **Introduction** to the exercise: **16.04.** (video on ISIS) + **Q&A session on 23.04.** at 2 pm (Zoom Meeting)
- **Exam** registration until **26.04.2024** (MOSES/MTS)
- **Enrollment** in the groups will take place via ISIS on **29.04.2024** from 18:00 (ISIS)

ISIS-Course
- Available from **15.04.2024** + Zoom link is also available on ISIS

**Gruppen** (ca. 20-25 Studenten pro Gruppe)
- Gruppe 1: Di 10:00 – 12:00 Uhr, **TBD**
- Gruppe 2: Di 10:00 – 12:00 Uhr, **TBD**
- Gruppe 3: Fr 10:00 – 12:00 Uhr, **TBD**
- Gruppe 4: Fr 10:00 – 12:00 Uhr, **TBD**
IV Multimodal Interaction (in English)
S. Möller, T. Kojic

Date
• MOOC - Videos on ISIS available weekly
• Intro Zoom Lecture - Monday 22.04.2024 at 14:00h
  Registration Deadline – 03.05.2024
  Groups Registration Deadline – 07.05.2024
  Project Submission Deadline – 14.07.2024
  1st & 2nd Written test** - TBD
  Course (including project and homeworks) will be held via ISIS

Content
• Introduction and Motivation
• Human Perception and Action
• Multimodal Perception
• Multimodal Action
• Multimodal Input Systems
• Multimodal Output Systems
• Multimodal Interactive Systems
• Virtual Reality
IV Digitale Systeme
S. Möller, M. Warsinke, M. Vergari

Termin
VL Dienstags, 08.15 – 09.45 Uhr, H 1012
UE Gruppeneinteilung über ISIS,
Q/A Meeting 18.04 15:00 Uhr, Zoom (link on ISIS)
ISIS Link und Schlüssel: https://isis.tu-berlin.de/course/view.php?id=38261 (Digsys2024)

Inhalt
1. Motivation und Einführung
2. Logik und Boolesche Algebra
3. Gatter und CMOS-Technik
4. Zahlendarstellung und Codes
5. Schaltnetze und Normalformen
6. Optimierung von Schaltnetzen
7. Standard-Schaltnetze
8. Speicherelemente und programmierbare Logik
9. Synchrone Schaltwerke
10. Register-Transfer-Entwurf und Mikroprogrammierung
Anwendungen Digitaler Systeme

Buchempfehlung
Dirk W. Hoffmann:
Grundlagen der Technischen Informatik, 4. Aufl., Carl-Hanser-Verlag, 2014
IV Natural Language Processing
S. Mohtaj

Time & Place
Wednesday 10 - 12 am, starts on 17.04.2024

Current fundamental topics in natural language processing are presented in the course. This includes text preprocessing steps, text vectorization and language models. Moreover, different tasks in NLP like text classification, keyphrase extraction, named entity recognition and machine translation and also the evaluation metrics for theses tasks are discussed in the course. The course includes practical project work to apply the taught models on real problems; therefore, basic knowledge of python and machine learning is recommended.
IV Natural Language Processing
S. Mohtaj

Time & Place
Wednesday **10 - 12 am**, starts on **17.04.2024**

ISIS-Link
https://isis.tu-berlin.de/course/view.php?id=38636

Please note that attendance in the first session of the course is mandatory for registration. Please check the ISIS page for the zoom link of the first session.

ISIS enrolment key: NLP2024

Location: online

Exam registration: 17.04.2024 - 02.05.2024
PJ Projekt Medienerstellung
R. P. Spang

Alle Informationen via ISIS

Kerninhalte
> über 10 Projektgruppen zu verschiedenen Medienthemen, teils von TU & FU, teils aus der Industrie
Grundlegendes Projektmanagement,
viel Gestaltungsspielraum & Eigeninitiative

Wichtige Termine zu Beginn
• Modulstart: **16.04 um 16 Uhr** im Hörsaal H 1012
• Projektgruppenwahl: **bis 23.04** via ISIS (zweite VL Woche!)
• Prüfungsanmeldung: voraussichtlich **bis 26.04** via MOSES
• Abschlusspräsentation: **15.07. 14 - 16 Uhr** in Präsenz

Kontakt
qu-teampromedi24@lists.tu-berlin.de
Study Project QU, Interdiszipl. Medienprojekt
D. Conde

- Study Project Quality & Usability: 6–9 ECTS
- Interdisziplinäres Medienprojekt: 10 ECTS

**Registration Procedure**

1. Register in ISIS Course: [https://isis.tu-berlin.de/course/view.php?id=38595](https://isis.tu-berlin.de/course/view.php?id=38595)
2. Read the project descriptions and check out the slots for project meetings under "Project Topics" (pdf).
3. **Until 14.04.2024 6 p.m.**: Please apply for your preferred topic using the google form link provided in the ISIS course.
4. **On 15.04.2024**: You will be assigned to your selected project if there are spots left. Preference is given to those who have the project's required skills and fill in the form first.
5. **On the first and second lecture week**: Attend the first session of your assigned (or preferred) project.
6. **Until 30.04.2024**: If you *are not* on the waiting list: register for the corresponding module via Moses/MTS

**All Introductions will be in the first and second lecture week**

Each topic will have its own introductory session, please check ISIS for more information
Time:

- **Monday - April 15, 2024**, 4:00 p.m. to 6:00 p.m. *(TEL 20 Audi / Zoom)*
  
  (see ISIS course for exact schedule).

- The seminar is limited to a maximum number of **28 participants**

- Candidates need to send an email with full name, immatriculation number and email address to yasmin.hillebrenner(at)tu-berlin.de by **April 24th, 23:59 CEST**.

- An initial selection of admitted students will be done on **April 25th**. All admitted students will receive an email on 25th April and MUST register via MOSES by **April 27th (before 23:59 CEST)**. Places of students who fail to register by that time WILL be reallocated to applicants on the back up list on 28th April. All students need to additionally register in ISIS to participate in the lecture quizzes, obtain assignments and submit assignments and papers.
Topic 1:

Exploring Political Biases and Disinformation Detection through HCI Experiments

Time: first meeting: **24.04.2024, Wednesday, 14-16 Uhr, MAR 0.011**

Place: Ernst-Reuter-Platz 7, **TEL 209 / online (or MAR 0.015 if TEL still closed)**

Capacity: 25 (mainly for Master students)

ECTS: 3 Punkte (90h)

Requirements:

• HTML, Python skills or experience with conducting user experiment and studies is mandatory

• Regular active participation

Project work:

• Conducting an experiment for a given topic as a group

• Presentation of experimental results

• Written project report
Topic 2:

**Machine Learning für Sprach-Dialog-Systeme**

**Time:** first meeting: **18.04.2024, Thursday, 14 - 16 hour**

**Place:** Ernst-Reuter-Platz 7, **TEL 20 Audi**

**Capacity:** 22

**ECTS:** 3 Punkte (90h)

**Requirements:**
- Regular active participation
- Willing to read scientific papers or book chapters

**Seminar work:**
- Weekly reading of topics related texts + small text related homework
- Preparation of a presentation about a specific topic
- Writing a short paper about the presented topic
Forschungskolloquium „Usability“

**Termin**
Montags 14:15 – 16:00 Uhr
Via Zoom & Auditorium 3, TEL 20

**Themen**
Wechselnde Themen aus allen Bereichen des Quality and Usability Lab, insbesondere
- Mensch-Maschine-Interaktion,
- Qualitätsmessung,
- Usability und User Experience,
- Sprach- und Audiosignalverarbeitung,
- Dialogsysteme,
- Crowdsourcing,
- Machine Learning und Natural Language Processing
- Usable Security und Privacy

**Aktuelle Termine und Themen unter**
https://www.tu.berlin/qu/studium-und-lehre/lehrangebot/forschungskolloquium/
Mehr Informationen unter www.tu.berlin/qu/