Björn Braun | CV

Zurich, Switzerland

✉ bjoern.braun@inf.ethz.ch | 🏠 bjbraun.github.io | in bjoern-braun | 🎓 Björn Braun

Education

ETH Zurich	*Zurich, CH*
PhD in Computer Science	*05/22 – 04/26*
ETH Zurich	*Zurich, CH*
M.Sc. in Robotics, Systems and Control	*09/19 – 09/21*
The University of Sydney	*Sydney, AUS*
Master exchange semester	*02/20 – 07/20*
ETH Zurich	*Zurich, CH*
B.Sc. in Mechanical Engineering	*09/15 – 09/18*

Experience

Doctoral Researcher *Zurich, CH*
SIPLAB, ETH Zurich *05/22 – present*
Focus: Camera-based and wearable physiological sensing for health applications and computer agents
- **Part I:** Recording **multimodal datasets** of synchronized physiological signals and camera recordings
- **Part II:** Developing novel deep-learning approaches to remotely extract physiological signals, such as heart rate and electrodermal activity, and a user's affective state from facial and hand videos (**Python**, **PyTorch**, TensorFlow)
- **Part III:** Enhancing **healthcare approaches** and intelligent computer agents using these physiological signals and affective indicators to better understand a user's behavior and provide **user-aware, personalized assistance**

Head Teaching Assistant, Human-Computer Interaction *Zurich, CH*
ETH Zurich *09/24 – present*
- Leading a team of 10 PhDs/PostDocs responsible for a course with 180+ students (teaching, exam, mentoring)

Engineering Intern *Baden, CH*
ABB Turbo Systems AG *10/18 – 04/19*
- Developed a thermo-mechanical fatigue simulation for turbochargers (MATLAB, Simulink, C) on an embedded device with limited memory and computational power (version control via TFS/Git)
- Tested and verified code using a hardware-in-the-loop test bed for later deployment

Head of Programming *Zurich, CH*
Focus - Project "Proboscis" *09/17 – 06/18*
- Elephant trunk-like robot capable of maneuvering through tight spaces (https://proboscis.ethz.ch)
- Conducted the project from scratch in a team of nine using agile sprints with self-organized funding of 70k CHF
- Supervised a team of three to develop the perception and electronics (version control via Git)
- Developed the control system for remote steering using inverse kinematics

Business Development Management Intern *Ningbo, CHN*
ProQC International Ltd. *09/14 – 02/15*
- Conducted factory audits and implemented spreadsheets for automated ISO norm evaluations (Excel, VBA)

Publications

Björn Braun, Daniel McDuff, Tadas Baltrusaitis, Paul Streli, Max Moebus, and Christian Holz. "SympCam: Remote Optical Measurement of Sympathetic Arousal". (IEEE EMBS BHI'24).

Björn Braun, Daniel McDuff, and Christian Holz. "How Suboptimal is Training rPPG Models with Videos and Targets from Different Body Sites?". (CVPR'24, CVPM workshop).

Max Moebus, Lars Hauptmann, Nicolas Kopp, Berken Utku Demirel, **Björn Braun**, and Christian Holz. "Nightbeat: Heart Rate Estimation From a Wrist-Worn Accelerometer During Sleep". (IEEE JBHI'24).

Björn Braun, Daniel McDuff, Tadas Baltrusaitis, and Christian Holz. "Video-based sympathetic arousal assessment via peripheral blood flow estimation". (BOE'23).

Additional Information

Languages	German [native], English [fluent], French [basic], Latin [Latinum]
Programming	**Python**, C++, ROS, MATLAB, Simulink, VBA
Libraries	**PyTorch**, TensorFlow, **NumPy**, pandas, scikit-learn, SciPy
Interests	I enjoy going snowboarding, ski touring, surfing, and running