JAN ULRICH BARTELS

Doctoral Researcher - Max Planck Institute for Intelligent Systems
jub@is.mpg.de | janulrichbartels.net

EDUCATION

MAX PLANCK INSTITUTE FOR INTELLIGENT SYSTEMS, Stuttgart, BW
Doctoral Candidate, 2023 - present
Advisors: Dr. Katherine J. Kuchenbecker and Dr. Michael Sedlmair

JOHNS HOPKINS UNIVERSITY, Baltimore, MD
Masters of Science - Robotics, 2021 - 2023
Advisor: Dr. Jeremy D. Brown

OREGON STATE UNIVERSITY, Corvallis, OR
Bachelor of Science - Electrical and Computer Engineering, 2012 - 2017
Major: Electrical & Computer Engineering
Minor: Computer Science

RESEARCH & PROJECTS

Demo J. U. Bartels, N. Sanchez-Tamayo, M. Sedlmair, K. J. Kuchenbecker "*Active Haptic Feedback for a Virtual Wrist-Anchored User Interface*", IEEE UIST 2024

Demo H. Zhang, J. U. Bartels, J.D. Brown "*3D Hapkit: A Low-Cost, Open-Source, 3-DOF Haptic Device Based on the Delta Parallel Mechanism*", IEEE World Haptics Symposium 2023

Paper G. Zhang, J. U. Bartels, A. Martin-Gomez, M. Armand, "*Towards Reducing Visual Workload in Surgical Navigation:Proof-of-concept of an Augmented Reality Haptic Guidance System*", AE-CAI 2022

Project J. U. Bartels, G. Zhang, U. B. Karli, K. K. Metha "*HoloStylus: Handheld Skin-Stretch Pen for Ungrounded Augmented Reality Interactions*", Haptic Interface Design for Human-Robot Interaction 2021

EXPERIENCE

Member - Haptics and Medical Robotics Lab May 2022 - June 2023
Johns Hopkins University, Baltimore, MD

- TA for course on Haptic Interface Design; teaching students about tactile sensors, absolute and relative perception thresholds, and psychophysical laws (Weber's Law, Fitts' law)
- Designed circuits for driving voice-coil actuators and interfacing with Wheatstone bridges in a strong electromagnetic field
- Assisted in eliminating undesired vibrotactile coupling in a novel research device

Contract Engineer - Embedded Systems June 2022 - June 2023
ClearGuide Medical, Baltimore, MD

- Designed 6 layer high density board connecting an Infineon FX3 with a Texas Instruments DLPC2607 micro-projector
- Demonstrated feasibility of system by writing firmware for the FX3 development board (CYUSB3KIT) which was capable of receiving bulk data via USB and writing that data accurately to the DLPC2607

Electrical Engineer II July 2017 - July 2021
Biamp Systems, Beaverton, OR

- Designed 6 layer boards for high-fidelity audio and digital networking
- Experience with SPI, I2C, UART, USB and 10/100 Ethernet
- Experience with designing high-fidelity analog outputs
- Led a cross functional team of 6 engineers to address component shortages
- Guided projects through EMC compliance testing

Hardware Engineering Intern September 2016 - February 2017
Biamp Systems, Beaverton, OR

- Debugged I2C, I2S and SPI interfaces using Saleae Logic Analyzers
- Completed 4 layer board layout for a telephone interface, with 5kV of high voltage isolation
- Wrote firmware for Analog Devices BF706 microprocessor in C

VLSI Verification Engineering Intern March 2015 - August 2015
Intel, Hillsboro, OR

- Wrote a gateware module in Specman and Verilog to monitor packets across an interface in HDL simulations and link them into larger transactions.

Teaching Assistant September 2013 - June 2017
Oregon State University Department of Computer Science, Corvallis, OR

- Programming Language: C & C++
- Taught features and behavior of stacks, queues, linked list and binary trees
- Covered concepts such as algorithm scaling and big O notation, sorting algorithms and memory management
- Led small recitation groups (10-15 students)
- Graded students' homework, exams, and drafted grading rubrics

Resident Assistant September 2013 - March 2015
University Housing & Dining Services, Oregon State University

- Connected incoming students to university resources
- Built relationships with the 40 residents on my floor
- Organized events for hundreds of residents

SKILLS

Hardware Design: Multimodal haptic interfaces (vibrotactile, skin-stretch, wrist squeeze), embedded circuits (schematic capture, layout, hardware bringup, DFM), high fidelity digital to analog and analog to digital conversion, power conversion (isolated & non-isolated), network interfaces (10/100 Ethernet), network protocols (ethernet, Bluetooth, BLE)

Software: KiCad, Altium, LTSpice, Solidworks, Arduino, Matlab

Languages: Embedded C, C++, Python, MATLAB

Spoken Languages: German (native), English (native)

SERVICE

External PhD Representative September 2024 - Present
Max Planck Institute for Intelligent Systems

- Attend general meetings with representatives from all 83 Max Planck Institutes to discuss working conditions and advocate for improvements.
- Organize social events for researchers at Stuttgart and Tübingen sites, giving researchers opportunities to network and share their work in a relaxed atmosphere.
- Network with fellow researchers and connect them with institute resources to help address their concerns.