

Sven Kratz

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U.S. Permanent Resident

Profile

I am passionate about inventing new technologies that improve the users' experience and empowers them with new and exciting capabilities. I am a full-stack interactive systems engineer who invents interactive artifacts from electronics up to the UI software. As a Human-Computer Interaction researcher, I value the importance improving the usability and UX of new technologies through studying actual users. I have inspired and led multiple research and productization teams developing industry-first interactive technologies. My work has resulted in multiple patents and academic publications at top venues in the field.

Work Experience

- 07/2020–09/2022 **Senior Research Engineer, Snap Inc.**, Seattle, WA
Engineered IOS watch UI for personalized messaging app. Replaced rule-based activity recognition module with bayesian model trained from user data. Led development of 5 AR lenses for research into collocated gaming and AR communications. Developed world-first CNN-based dog emotion recognizer for pet-based AR lens experience. Trailblazed full stack (hardware and software) development of an artificial nose prototype, using ML to classify a multitude of household scents. Authored and filed 37 invention disclosures. Apps and lenses deployed to hundreds of thousands of users.
- 07/2019–07/2020 **Senior UX and HMI Engineer, Kodiak Robotics**, Mountain View, CA
Spearheaded UI/UX design and development of highly usable human-machine interfaces (HMI) for autonomous trucks. Rearchitected legacy JQuery-based UI code to use React.js, Bootstrap and MobX with THREE.js for better modularity, maintainability and extensibility of Kodiak's UI software stack. Designed and implemented a new autonomous vehicle UI for our trucks with demonstrated improvement of the UX for internal users and investor/customer facing technology demonstrations.
- 12/2018–04/2019 **Senior Research Scientist, TuSimple**, San Diego, CA, USA
Engineered machine learning models for trajectory prediction of other vehicles in critical traffic situations. Developed patent-pending audio-based warning HMI for autonomous truck testing driver and engineer for situations that potentially require autonomy disconnects.
- 04/2017–11/2018 **Senior Principal Engineer / Senior Manager, Harman X Head of AI, Harman International, Future Experience Team**, Mountain View, CA
Architected industry-first advanced driver monitoring system using cognitive load and emotion sensing with driver-facing camera array. Designed shape-shifting robotic HMI controllers for upcoming high-end vehicle of major auto OEM. Bootstrapped and managed offshore team of 10 productizing AI technologies for Harman X.
- 10/2012–04/2017 **Research Scientist, FX Palo Alto Laboratory (FXPAL)**, Palo Alto, CA, USA
Invented a gesture-based user authentication system using depth sensor data. Coordinated a robotics research group and developed novel user interfaces for telepresence robot operation using wide-angle imagery and stereo AR. Member of the FXPAL *Technology Assessment Panel* that evaluates and decides on IP filed by the lab. *FXPAL Significant Achievement Award received in 2014.*
- 02/2011–09/2012 **Research Assistant, University of Munich**, Munich, Germany
Research assistant (full-time staff position) at the *Chair for Media Informatics*, member of the Mobile Interaction Lab of Prof. Dr. Michael Rohs. Assisted in teaching, assignment design and evaluation in lectures on image processing and mobile human-computer interaction. Developed research prototypes for around-phone spatial interaction and wearable input system for mobile devices using depth sensors.

04/2008–01/2011 **Junior Researcher**, *Telekom Innovation Laboratories and TU Berlin*, Berlin, Germany
Junior researcher (full-time staff position) in the *Quality and Usability Group*, where I started work on my Ph.d. in Computer Science under the guidance of Prof. Dr. Michael Rohs and Prof. Dr. Sebastian Möller. Developed research hardware and software prototypes and IP for novel mobile user interfaces using motion, pressure, distance and depth sensors.

2010 and 2011 **Summer Research Internships**, *Microsoft Inc.*, Redmond, WA
Interned at the *Microsoft Applied Sciences Group*, mentored by Dr. Paul Dietz. Designed and implemented *Mayhem*, an open-source end-user programming environment for Windows. Evaluated depth imaging technologies for 3D scanning and finger-based gestural input. Implemented robotic arm control application for evaluation of a multi-touch trackpad.

Education

2011–2012 **Ph.D. (Dr. Rer. Nat.), Computer Science**, *Faculty of Mathematics, Computer Science and Statistics, University of Munich*, Munich, Germany, Final Grade “Magna Cum Laude”
Ph.D. Student at the Chair for Media Informatics of the University of Munich.

2008–2011 **Graduate school**, *TU Berlin*, Berlin, Germany
Ph.D. Student in Computer Science at the Quality & Usability Group, Deutsche Telekom Laboratories.

2000–2007 **Diplom (M.Sc. equiv.) degree in Computer Science**, *RWTH Aachen University*, Aachen, Germany, Final Grade 1.0/1.0 – “Very Good”, Business Administration as minor subject

Languages

German Mother Tongue

English Fluent

spoken and written

French Fluent

spoken and written

Development Skills

Programming Languages JavaScript, Python, Swift, C/C++

Focus Areas Frontend, Graphics, AR, Applied ML

Miscellaneous Unity, Three.js, React, React Native, cloud (AWS and GCS) basics

Hardware 3D printing, CNC milling, electronic circuit prototyping

Publications and Patents

Published **32 peer-reviewed scientific publications** at top journals and conferences, 1 best-paper and 2 honorable mentions. **26 granted** and a multitude of pending US and international patents.

Hobbies and Continuing Education

Aviation FAA Private Pilot Certificate Airplane Single-Engine Land (PPL-ASEL)

Mountain Sports hiking, snowboarding

FAA Remote Pilot Certificate, Small Unmanned Aerial Systems (sUAS)

Continuing Education **Self-Driving Car Engineer Nanodegree Terms 1 and 2**, (Udacity, 2017/18)

BUS 205—Managing Innovation, Stanford Continuing Studies (Marv Patterson, 2014)

Online Stanford Machine Learning Class (Andrew Ng, 2011).