Cayden Pierce

caydenpierce.com
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Skills

General: Human Computer Interaction. Wearable Computing, Brain Computer Interface, Assistive Technologies, Sensing, Public Speaking, Team Leadership, Project Management
Programming Languages: Python, Javascript, Java, Unix shell, C, C++, HTML5+CSS3
Programming Technologies: Linux, Android, Flask, React, Node, Git, Apache2/Nginx, GCP/AWS, Python signals (numpy, scipy, tensorflow, keras, pandas), i3, vim
Data/Math/Analysis: Algorithms, Fourier Analysis, Biosignals (EEG, EMG, PPG, fNIRS) processing, Machine Learning, Computer Vision
Electronics: Prototyping, Single Board Computers, PCB Design and Assembly (0402 SMD), Sensors, Microcontrollers, Firmware, Communications (Wifi/BT)

Publications

Water-Human-Computer-Interface (WaterHCI): Crossing the Borders of Computation, Clothes, Skin, and Surface
Mann. et. al
In Proceedings of the 23rd annual Water-Human-Computer Interface Deconference (pp. 6-35)

Wearable Affective Memory Augmentation
Cayden Pierce and Steve Mann.
arXiv Preprint 2021

"Vironment": An Art of Wearable Social Distancing
Steve Mann, Cayden Pierce, Christopher Tong, Christina Mann.
arXiv Preprint 2021

Sensing of the Self, Society, and the Environment
Steve Mann, Cayden Pierce, Aman Bhargava, Christopher Tong, Khantil Desai, Kyle O'Shaughnessy
IEEE Sensors 2020

Low-cost brain-and-world-sensing eyeglass
Steve Mann, John David Chibuk, Cayden Pierce
IEEE Brain Workson Advanced Neurotechnologies, 2020

Wearable BCI Camera for Enhanced Memory
Dr. Steve Mann, Dr. David Eagleman, Ariel Garten, Cayden Pierce, John David Chibuk
IEEE Brain Workshop on Advanced Neurotechnologies, 2020

Drone Swarms for Sensing of Sensing
Steve Mann, Cayden Pierce, Jesse Hernandez, Qiushi Li, Bei Cong Zheng, Yi Xin Xiang
IEEE Sensors 2019

The Human Eye as a Camera
Steve Mann, Derek Lam, Kyle Mathewson, Jeremy Stairs, Cayden Pierce, Jesse Hernandez, Georges Kanann, Luke Piette, Humza Khokhar
IEEE Healthcom 2019

ACM WearSys 2019 Keynote
Steve Mann, Diego Defaz, Cayden Pierce, Derek Lam, Jeremy Stairs, Jesse Hernandez, Qiushi Li, Yi Xin Xiang, Georges Kanaan, Hongyu Chen, Graeme Aylward, Megan Jorritsma, and Christina Mann
ACM WearSys 2019

Encephalogames (Brain/Mind Games): Inclusive health and wellbeing for people of all abilities
Steve Mann, Diego Defaz, Tamer Abdulazim, Derek Lam, Mike Alford, Jeremy Stairs, Cayden Pierce, and Christina Mann
IEEE GEM 2019

Integral Kinesiology Feedback for Weight and Resistance Training
Steve Mann, Cayden Pierce, Bei Cong Zheng, Jesse Hernandez, Claire Scavuzzo, Christina Mann
IEEE Sensors 2019

Work Experience

Lead Jan 2020 - Present
Emex Labs Toronto, Canada

- Building wearable intelligence, knowledge, and sensing tools

Research Intern Jan 2022 - May 2022
National University of Singapore HCI Lab Singapore (Remote)

- Researching semantic tools for mobile idea generation and thinking

BCI Researcher, BCI Lead May 2020 - August 2021
Blueberry X Technologies Toronto, Canada

- Building the world's cheapest, smallest, and most wearable brain sensor in the form of fNIRS BCI glasses
- Machine learning, wearable computer vision, biosignal processing, firmware, full stack web, electronics, hardware

Wearable Computing Course Advisor Sept 2020 – April 2021
University of Toronto Toronto, ON

- Working with Professor Steve Mann on wearable computing course content

Researcher, Lab Manager May 2020 – August 2020
MannLab Canada Toronto, ON

- Engineering EyeTap wearable computers for memory, mental health, and extended senses
- Responsible for lab, team, and project management, team of 20+ engineers, students, researchers, scientists
- Developing academic and industry partnerships

Researcher, Team Lead May 2019 – August 2019
MannLab Canada Toronto, ON

- Developed brain sensing technique to use the human eye as a camera

- Applied this new methodology in a wearable computer that used EEG to extend human memory capacity
- Leader on a core team of 12+ researchers

Project Lead, Engineering June 2018 – August 2018
DGI One World Saltillo, Mexico

- Developed a CNC spindle testing system within a constrained time/budget
- I led a team of 3 engineers to build a system in one month for $1,000 (vs $250,000 retail)

Conferences and Presentations

The Human Eye as a Camera Oct 2019
IEEE Healthcom Bogota, Colombia (In Person)

Sensing of the Self, Society, and the Environment Oct 2020
IEEE Sensors, Invited Presentation Global (Virtual)

Creating BCI Glasses to Optimize Mental Performance Jan 2021
NeurAlbertaTech Chat University of Alberta (Virtual)

How fNIRS BCIs Work and Building Tech with Copypasta Feb 2021
Q-MUNITY Vision Conference Global (Virtual)

Education

Sofware Engineering, B.E.Sc | ***Embedded Systems*** 2017 - 2022
Western University London, Ontario