

**Johnty Wang**  
PhD Music Technology, McGill  
MASc Electrical and Computer Engineering, UBC

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**Overview** *From physical sensor interfacing to end user application implementation: Research, Rapid Prototyping, Development and Evaluation of complete implementation pipelines for IoT and wireless/connected interactive digital systems for novel and interdisciplinary settings.*

**Skill Highlights** ***Programming Languages:** C/C++, C#, Python, Java, Matlab  
**IDEs and tools:** Visual Studio, XCode, Eclipse, git, command-line/bash  
**Operating Systems:** MacOS, Windows, GNU/Linux, iOS, Android  
**Embedded Engineering and Electronics:** Sensors and Sensor Interface Design (hardware, firmware, RF protocols - BLE, Wi-Fi, LoRa), Arduino, Espressif ESP32, Raspberry Pi, PCB Layout and Design  
**Rapid Prototyping:** Fusion 360, OpenSCAD, 3D printers (Assembly, maintenance, and modification), Surface Mount Circuit Assembly for Small Scale Prototyping/Production*

**EXPERIENCE** *Software and Integration Engineer* Feb 2019 - Jun 2020  
Emotional Imaging, Incorporated

- Development of the Emotional Imaging Composer, a real-time environment that predicts emotions from biosignals captured from a wireless Bluetooth sensor to drive an interactive multimedia performance system
- Implementation and integration of machine learning pipeline: a Visual C++ Sensor processing (Bluetooth 2.0 SPP using Thought Technology API) and machine learning backend (libSVM), and a GUI application in C#/Unity. Verification of processing pipeline in Matlab
- Testing of system and training with professional actors using the system for live performance

*Software/Hardware Engineer* Sep 2014 - Sep 2018  
Infusion Systems

- Hardware, firmware and software development for I-CubeX family of sensors used for digital interactive art via embedded Linux and microcontroller platforms.
- Circuit design, component selection, interface driver, sample application development and documentation for multi-protocol wireless sensor interfaces (hardware supporting both MIDI over Bluetooth Low Energy, and OSC over Wi-Fi, interfaced with analog and digital sensors using SPI, i2c, UART)
- Implementation and adaptation of the BLE MIDI GATT to work with Infusion's existing sensor interface protocols and mapping applications
- Construction of test jigs, interface firmware, and procedures to empirically verify system bandwidth and sensor to audio latency performance of BLE and Wi-Fi and other protocols, with results published at international conferences
- Small scale prototype production and verification before higher volume manufacturing

*Software Engineer* Dec 2013 - Dec 2014  
HPlus Technologies

- CANARIE funded research/industrial collaboration for building middleware to support new media researchers working with movement and gesture
- Integration of sensing devices, recognition algorithms and output modules
- Cross platform integration, software packaging, and testing

*Lab Manager* Jan 2013 - Dec 2013  
UBC Media and Graphic Interdisciplinary Centre

- Maintained lab equipment including workstations, test servers, 2D and 3D Printers
- Organized lab meetings, reading groups, and social activities
- Supervised undergraduate students in capstone and special research projects

*Research Assistant (Masters)* Sep 2009 - Aug 2012  
UBC Media and Graphic Interdisciplinary Centre

- Research and development and technical support of the implementation of a gesture controlled speech and singing synthesizer
- Built hardware interfaces and drivers for wireless input systems including the Bluetooth Cyberglove, and custom wireless controllers using the BT 2.0 SPP.
- Research on voice synthesis and mapping for expressive gesture to singing

*Software Developer (on contract)* June 2012 – May 2013  
UBC Theatre Department

- Designed and implemented a prototype theatrical stage illumination system using multiple digital projectors driven by digital content (C++ / OpenFrameworks)
- Integrated system with hardware DMX and MIDI interfaces to operate professional lighting control systems
- Deployed and tested system in theatre control room

*Software Developer (co-op)* 2004 - 2007  
Various

- Electronic Arts Canada (4 mo)- Implemented prototype audio asset management system for internal audio rendering framework (C# / XML)
- UBC Human Computer Technologies Laboratory (8 mo)- Implemented a GUI probe editing interface for the Artisynt bio-mechanical modelling system (Java)
- Harman Becker Automotive Systems / Wavemakers (8 mo)- Implemented a multi-waveform and spectrogram visualization GUI application for audio analysis (Visual C++ / MFC)

**Patents** *US Patent Pending - “Emotional Imaging Composer”* (Jordan Deitcher, Michel Benovoy, Johnty Wang)

*US10485436B2- “Sound-Generating Device for In-Utero Interactions with a Developing Fetus”* (Aura Pon and Johnty Wang)

**Education** *Bachelor of Applied Science in Electrical and Computer Engineering*  
*Master of Applied Science in Electrical and Computer Engineering*  
University of British Columbia

*PhD Candidate in Music Technology (All requirements met; Graduation Feb 2022)*  
McGill University