Christopher Konopka
Creative Full Stack Developer
Boston, MA
cskonopka.com – cskonopka@schwwaaa.net – creativecoderesearch.tumblr.com – +19785011798
Instagram/GitHub/Vimeo: cskonopka

The Semisphere Group [Full Stack Developer] *(July 2015 - Present)*
- Responsible for designing custom hardware/software solutions for Rhode Island Space Grant Consortium projects under the direction of Seth Horowitz, PhD & Peter H. Schultz, PhD
- Developed a modular hardware/software anti-nausea solution called *"Oream" [Raspberry Pi/Python/Linux/Custom PCB]*
- Built custom VR software for navigating models of distant geological structures in real-time with joystick control and location transport for geological surveying *[MaxMSP/Jitter/Unreal]*
- Created custom prototyping software for prosthetic hand gestures *[MaxMSP/Arduino]*
- Designed a mobile app for testing auditory solutions for pain management *[Android/Processing]*

The Engine Institute [Full Stack Developer] *(July 2015 - Present)*
- Developer of *"MindDraw"*, a real-time interactive visualizer controlled by a user's "Meditation" and "Attention" brainwave levels *[MindWave/Emotiv]*
  - Created custom software to capture/filter user brainwaves for optimal responsiveness [*MaxMSP]*
  - Routed auxiliary brainwave patterns into a "gravity engine" to provide more dynamic control *[Jitter]*
- Architect of *"Imagining Blue"*, an interactive LED sculpture controlled with brainwaves
  - Invented a modular serial stack program that allowed for the creation of 30+ simultaneous serial connections that could be controlled in real-time *[MaxMSP/MindWave/Arduino/Serial Protocol]*
  - Developed custom software that modularized each brainwave with it's own set of filtering algorithms and visualizations *[MaxMSP]*

yackcom.com [Full Stack Developer] *(Sept 2017 - Jan 2018)*
- Responsible for designing and developing a text-based notification and web chat communication paradigm using Twilio for emergency services *[Javascript/React/Web Sockets]*
- Engineered the server from scratch using Amazon Web Services *[EC2/DynamoDB/Route53/Node.js]*
- Implemented a button-to-text system to update the client about the current process
- Created a server-side API to receive incoming sms messages from a client which are routed to a web chat interface and chat responses are texted back to the client using the Twilio npm library *[Node.js/Axios/Web Sockets/ngrok]*
- Installed a prototype user base and created a modular profile template so a user could read and export individualized chat logs *[Auth0/DynamoDB/React]*

Multimedia Innovations [Full Stack Developer] *(March 2017 - Present)*
- Lead developer on *"Stenos"*, a cloud-based transcription web application *[Javascript/Node.js/Express.js/IBM Watson/API]*
  - Invented an automation methodology for generating new webpages with an embedded searchable transcription interface for both audio & video sources
  - Created features such as keyword highlighting, quote/word save & share and keyword playback

Pickasound [Lead R&D/Web Audio Developer] *(Jan 2015 - Dec 2016)*
- Designed the audio DSP architecture which included a standardized effect chain, pitch-shifting, time-stretching and multi-track recording with automation *[Javascript/Wavesurfer.js/Web Audio API/DSP.js]*
- Created internal and UI/UX unit-tests for audio DSP algorithms
- Developed webpage templates and UI/UX designs *[Javascript/React.js/Redux]*
- Researched and developed fast-rendering audio algorithms *[Node.js/Csound/AWS S3]*

arduivis [Project Developer] *(2016 - present)*
- A bi-directional communication paradigm for programming languages & microcontrollers
- Utilizes the ability to build a Serial communication stack manually, allowing for more control, compared to the Arduino Firmata
- Increases research potential of unique datasets that may have been previously overlooked and cuts down research/development time
- Initially created in MaxMSP and Pure Data but has been expanded to Python, Node.js, and in development, Golang

Boulanger Labs [Software Architect/Audio DSP R&D] *(2013 - 2015)*
- Software Architect/Integration Specialist for the Leap Motion application *"Muse"* featuring BT *[Pure Data/Csound/OpenFrameworks/Objective-C]*
  - Designed the underlying software architecture which connected OpenGL elements in OpenFrameworks to Pure Data using OSC and then routing these gestures into Csound
  - Developed the *"Auto Muse"* feature, an algorithmic play-along system using Fibonacci number theory
- Prototyped audio DSP algorithms/audio UI integration specialist for *"csSpectral" [Csound/iOS]*

First Night Boston 2014 - First Light *(Dec 31, 2013)*
- Designed an autonomous drawing machine which would observe environmental conditions using ultrasonic range finders, photocells and electret microphones *[Arduino]*
- Developed simple Machine Learning algorithms which would pool the collected data and make smart design decisions *[Arduino]*

Palm Data (Montana Occupational Therapy Association Conference) *(April 2013)*
- Developed, in collaboration with Occupational Therapist John Konopka, a glove system with an embedded pressure sensor to observe/collect applied pressure data from patients *[Arduino/MaxMSP]*

Berklee College of Music [Assistive Music Technology Developer] *(2010 - 2012)*
- Inventor of *"Optical Sonance"*, a real-time abstract drawing and sonification machine (Senior Thesis)
  - Developed custom software to link stepper motor position to designated locations based on an array of photocells *[Arduino/MaxMSP]*
  - Designed custom audio software, based around the Lucas number system, for sonifying incoming light data as it was being drawn *[Arduino/MaxMSP/Number Theory]*
  - Post project, developed a custom 3D-printed pen harness with detailed lift control using micro servo motors *[Arduino/CAD/3D Printing/Servos]*
- Inventor of *"wiiAirDrum"* for the *Assistive Music Technology for Blind and Visually Impaired Musicians* at Berklee College of Music
  - Created a custom audio sampler linked to two wiiMotes which would trigger different samples based on specific hand gestures and button combinations *[MaxMSP]*
  - Software, along with several drawing machines, was featured at the *"2012 President's Advisory Council Meeting hosted by Roger Brown"*
- Inventor of "*MIT-1" (Mini Interactive Tutu)* for Nona Hendryx
  - Modified an RC car with a custom frame with an audio responsive LED structure to create RGB LED color shifts in real-time *[Arduino/FFT/Electret Mics/RGB LEDs]*
  - Created a robotic head system out of PVC using a series of heavy duty servo motors that could pan and tilt, giving the car a sense of character *[Arduino/XBee/Servos]*
  - Inventor a wireless glove system so the performer could make the robotic head pan/tilt during the performance, making it look like it is listening to the performer *[Arduino FIO/XBee]*

Education

AWS Solutions Architect Certification *(currently studying)*
Berklee College of Music *(2008-2012) [B.M. Electronic Production & Design]*