

# Robert B. King

[rob@xzz.ca](mailto:rob@xzz.ca) - <http://xzz.ca> - (647) 898-4235

I am a Creative Technologist with over a decade of experience in developing software, hardware, and unique experiences for a diverse set of clients ranging from agencies and brands to artists and academics. Every project has its own unique needs, so this has made me an expert in learning new technologies quickly, creating unique solutions to unique problems, and implementing full technology solutions in fast-paced environments. To put it short: I'm great at plunging fearlessly into a problem and "figuring it out." I love helping others figure it out too.

I take on different roles as needed based on the needs of a project. Software/hardware development, front-end, back-end, UX, interactive/game/graphic design, data visualization, fabrication; whatever is required to make a project successful. This ability to change roles on demand lets me fill in the skill gaps in a team, or allows me to bring a project to fruition autonomously. I'm excellent at gearing my communication to people with varying technical backgrounds. I'm just as comfortable explaining technical ideas to CEOs as I am deciphering creative directions for coders.

I am technology agnostic and believe in using the right tool for the job. Below is a sampling of technologies that I have used in the past. If you don't see a specific skill or technology, ask me. If I haven't used it already, I'd love to learn.

## Programming Languages

Java, Python, TypeScript, JavaScript, HTML5, CSS, C#, Objective C, C++, C, PHP, Lua, WWW, Turing

## Frameworks/Libraries

Django, Flask, Node.js, Angular, Ember, Three.js, D3.js, Phaser, WebGL, OpenGL, Processing, Open Frameworks, Unity, Arduino, jQuery, Blockly

## Protocols

Bluetooth LE, TCP/UDP Networking, Web Sockets, Socket.io, OSC, Artnet, DMX, MIDI, MDNS/Bonjour, XMPP/Jabber, RS232/Serial

## Devices

Raspberry Pi, Arduino, Depth Cameras/Kinect, Pulse Oximeters, 6DOF Motion Trackers, EEG Sensors, MIDI Controllers, Theremin

## General

Frontend/Backend/Desktop/Mobile/ Embedded Development, Graphic Design, UI/UX, Physical Computing, Data Visualization, Internet of Things, HTTP/REST API Development, SPA, MVC, Rapid Prototyping, JSON, SQL, NoSQL, Mobile iOS/Android development, CAD/CAM, NLP, Computer Vision, Generative Design, Electronics, 3D Modeling/Printing

I'm currently looking for opportunities to apply my diverse skill-set to do a deep dive into an interesting problem.

## Selected Projects

### Light Wall (2018 - In Progress) Smart Centres, Studio F Minus

Commissioned to develop artistic software to dynamically drive a large scale (177' x 57') public lighting installation as part of the Transit City condo at Vaughan Metropolitan Centre.

### Floto (2018 - In Progress)

Currently developing a mobile multi-camera photo booth rig to capture 'bullet-time' style GIF Videos for social sharing and generate lenticular prints for on-site takeaways. Built a Django/Wagtail backend to manage user flow, data collection, image processing, and media storage. Developed software to run on Raspberry Pi based camera modules to synchronize capture and provide a live video stream for preview.

### Maverick Condo Showroom (2018) Pure Blink, Empire Communities

Created software to control lights in a condo architectural model. Programmed Node.js middleware to interface with a third party Socket.io based lighting control system. Built a JSON based HTTP API to allow a Unity-based iPad app to control the lights. Developed a selection of lighting animations for when no clients are actively interacting. Was able to rapidly troubleshoot and redevelop the protocol implementation in plain TCP sockets in response to a third-party vendor error.

### Dystopia 2153 (2018 - In Progress) TEACH Magazine

Developed an online interactive graphic novel to teach kids coding. Programmed a Django/Mezzanine based CMS for managing users and media content. Created an AJAX/REST driven frontend in Angular to display graphic novel content. Developed a block-based graphical programming environment to allow users to program solutions to coding puzzles, exercises, and games.

**Happiness by Design (2017)** Toyota, Vice, PVS

Designed and implemented a hardware and software solution to control and visualize an interactive volumetric lighting installation for Toyota and Vice Motherboard. Coded an interactive 3D visualization of the site in Java/Processing. Programmed C# software to send video and skeleton data from multiple Kinect cameras to a central visualization server. Designed a physics-based interactive multi-user experience. Worked closely with technicians to integrate a four-story-tall 3D pixel-light matrix.

**Aurora Alcove (2017)** Urban Visuals, Canadian Science and Technology Museum

Coded Python software for a permanent interactive lighting display that simulates the aurora borealis at the Canadian Science and Technology Museum. Interfaced with lights using the Artnet network protocol. Integrated a third party capacitive touch sensor system through a serial data protocol. Developed a visualization/simulator that allowed the entirety of the work to be done offsite. Optimized software to run on the limited resources of a Raspberry Pi.

**Joy Garden (2017)** Urban Visuals, Cadillac Fairview

Developed software and hardware installed as part of an interactive lighting display at CF Sherway Gardens. Designed and programmed an Arduino based hardware solution using capacitive touch sensors and RGB LED lights. Coded Processing and Arduino software to generate light animations triggered by Twitter and Instagram hashtags. Provided creative troubleshooting, correlating electrical noise from an audio amplifier with capacitive touch sensing issues.

**Travelers: Save the Future (2017)** Mpossible Events, Corus

Designed and fully implemented an interactive game installation for the TV show Travelers. Installed at Fan Expo Toronto 2017. Developed Java/Processing based game software, UX and game design. Sourced unique HCI devices and developed code to interface with them. Programmed lighting and physical actuators.

**Accenture Event Name Tags (2017)** Tennis, Accenture

Created a hardware and software solution to track participants within an event space using remotely controlled, Bluetooth LE enabled illuminated nametags. Programmed microcontrollers embedded in the badges and Node.js middleware to interface with a client-provided Django backend.

**Nissan Rogue Shark Tank (2016)** Lunch Inc., Nissan, Discovery Channel

Designed, fabricated and programmed an animatronic, fiber-optic illuminated, laser-cut acrylic shark. Installed in a shark tank built into a Nissan Rogue SUV. Shown on the Discovery Channel for Shark Week, and publicly displayed at Ripley's Aquarium. Provided client with an ethical solution to the problem of putting a shark in an SUV, and implemented that solution in an extremely short timeframe.

**The Lego Experience (2016)** Isobar, Lego

Created a unique solution for the real-time digitizing of children's Lego models and immediately inserting them in a video game. Devised and implemented a Python/Flask based system that coordinated multiple networked cameras and lighting devices. The system was able to capture images of a Lego model from various angles under different lighting conditions and perform automated background subtraction. Worked closely with team members to create an HTTP API and integrate a tablet-based user interface, and a Unity-based game.

**The Luminous Veil (2015)** Studio F Minus, Dereck Revington Studio, City of Toronto

Co-developed the Java software to control a permanent lighting installation on the 500m Prince Edward Viaduct in Toronto. Worked closely with lead artist/architect Dereck Revington for over a year to translate his vision into code. Created a custom visualization and GUI to allow the artist to tweak nearly one hundred parameters. Developed network code to interface with an on-site weather station. Programmed a fluid simulation to control over 3000 LED lighting fixtures.

**Share the Love (2015)** City of Mississauga

Designed and developed a WebGL based 3D visualization of tweets geo-located in Mississauga. Programmed and deployed a Spark-based Twitter data collection server on Heroku. It was publicly viewable online and on-site at Celebration Square in Mississauga, ON during the 2015 Pan-Am Games.

**We Day Twitter Visualization (2014)** We Charity, Studio Nord Est

Created an interactive 3D Twitter visualization that used image processing techniques to generate a client selected image using the text of audience tweets. It was an integral part of the programming for the North American We Day tour and MTV live stream

## Real Notable (2014)

Programmed an Angular/NoSQL based, offline-usable, mobile real-estate listing web application. Conceptually similar to Tinder but for real estate. Allowed users to rapidly filter possible house listings. Successfully found me a house to purchase.

## Akimbo.ca (2014) Akimbo.ca

Developed a mobile web-app for the art-listing website Akimbo.ca. Created a single page Ember.js app, and programmed the supporting HTTP JSON API.

## We Run the Night (2013) Blast Radius, Nike

Created an automatic video generator for a Nike running event. Participants had their photo taken, and computer vision used facial feature recognition to insert the participant in a sharable video.

## Nike Shoe VJ (2013) Blast Radius, Nike

Designed and developed a software and hardware solution for an interactive in-store display installed by Nike at the Sport Chek Toronto flagship store. Wrote Java/OpenGL software that allowed users to explore product features and create artworks in a 3D space. Interfaced with a magnetic 6DOF position tracking system. Designed a unique 3D UX/UI. Optimized software to allow the simultaneous display of hundreds of high resolution animated textures on a 3840x4320px eight-screen. Provided creative troubleshooting services by correlating historical weather data with hardware failures.

## Nissan Shift Pulse (2013) Capital C, Nissan

Created an interactive experience for Nissan shown at the Toronto International Auto Show, and on the Nissan Innovation Tour. Developed a serial interface with a heart rate monitor. Created a system to generate shareable "word portrait" images. Designed UI/UX, and programmed 3D game in Java/Processing.

## FLUXe (2011) Capital C, Scotiabank

Created frontend/backend/game software for an interactive artwork commissioned by Scotiabank for display at Nuit Blanche 2011. Created a mobile web interface that let users paint on a 100'x33' LED screen using web socket networking for real-time control. Developed 3D Java/Processing based art application.

## Tentacles (2011) OCAD Mobile Lab

Developed and programmed an art-game, and the associated iOS/Android app. This project, one of the earliest examples of second-screen interactivity, was shown as part of Paola Antonelli's Talk to Me exhibition at the Museum of Modern Art in New York.

## Akimbo.ca iPhone App (2011) Akimbo.ca

Programmed an arts listing iOS app and associated JSON API.

## Bit Flows (2008)

MA Thesis – Developed a modular data-flow programming system to facilitate networked collaboration between digital performance artists. Created a method for simplifying network connection using MDNS.

## Locus: ESI (2005)

Created a Python-based Jabber/XMPP instant messaging client that used natural language processing techniques to analyze and visualize online conversations. Featured in Manuel Lima's Visual Complexity book.

## Experience

### XZZ Creative Technologies (2010-Present)

Creative Technologist/Founder

### Queen's University Belfast (2009-10)

SARC – COMEDIA Artist in Residence

### Canadian Film Centre Media Lab (2008-9)

Research and Production Manager

### Ontario College of Art and Design (2007-11)

Lead Technologist – Mobile Experience Lab

Lead Technologist – Portage Mobile Lab

## Education

### York University (2008)

MA Communications and Culture

### Ryerson University (2005)

BFA Image Arts: New Media