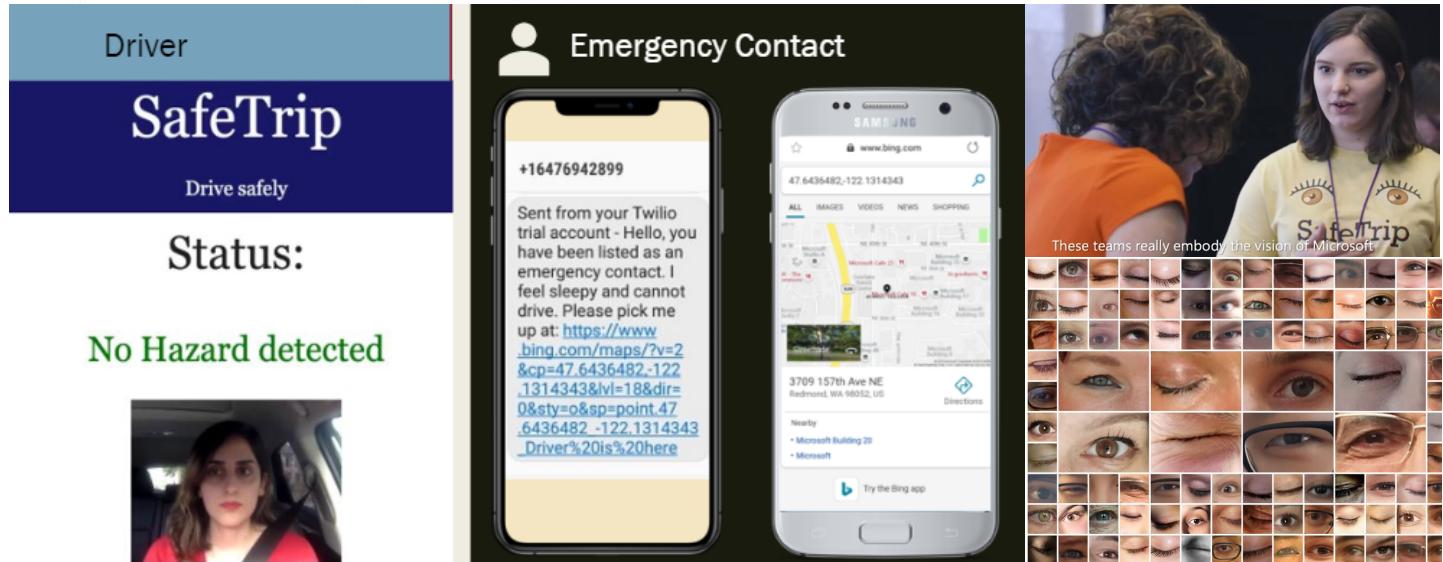


Kathrine von Friedl Projects

SAFETRIP (BLINK)

Microsoft's Imagine Cup Finalist 2019 | Seattle, WA | Jan 2019 - July 2019

UofT Hacks 4th place winner, Best use of Microsoft technology sponsor prize winner



SafeTrip is an angular JS application. Using a phone's camera, a photo is taken of the driver each second. That photo is then sent to the SafeTrip backend to be analyzed. There, an Azure function equipped with custom vision and cognitive services discerns if the photo features a driver with open or closed eyes. This is made possible by our custom trained neural network. If confidence scores surpass a certain threshold for 3 consecutive seconds, indicating that the user has their eyes closed for 3 seconds, the user is a hazard. Following the hazard classification, SafeTrip plays a loud sound to alert the driver and send a text message to an emergency contact using Twilio's API. The text message contains the latitude and longitude of the driver made available on a map.

Targeting sleepy, inattentive and distracted drivers, the app ensures that your driver gets you to your location and that everyone has a SafeTrip.

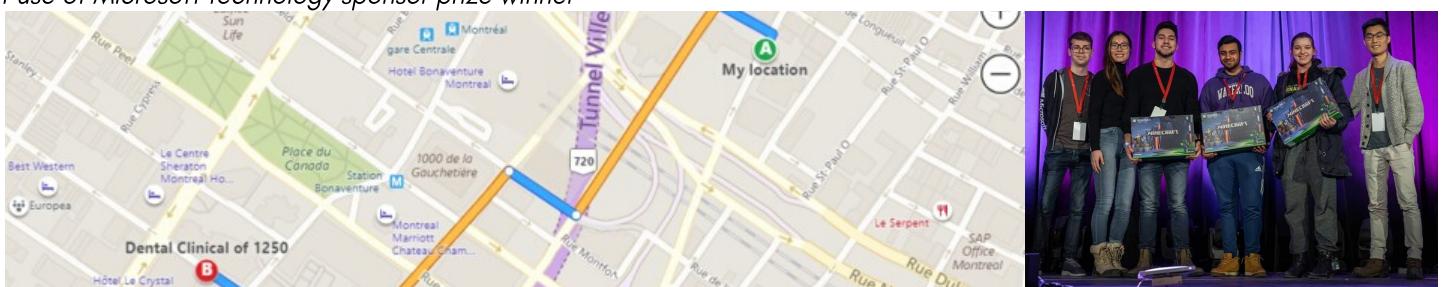
Video demo:

https://youtu.be/_ymhR_6bwW0
<https://youtu.be/KIJsR7SrIbM>

DESTINATION DOC

McHacks / Montreal, ON | Feb 2019

Best use of Microsoft technology sponsor prize winner



DestinationDoc is a route mapping service that connects a user to the nearest available specialist based off of the user's malady/symptoms. The app also allows for users to know the full extent of there wait time. This is done by route mapping using Bing maps API (with real-time traffic) as well as Cisco's Meraki API. Using a live webcam a rough estimate of the number of people in a room is determined. That value is multiplied by constant average appointment time. Using this wait time, clients have the ability to tell the approximate time until they may receive adequate healthcare. Our final feature was a button tthat could call the phone number on file for the healthcare practitioner and using an automated system written with Twilio's API, book an appointment for the expected arrival time (thereby eliminating the wait time to see a doctor).

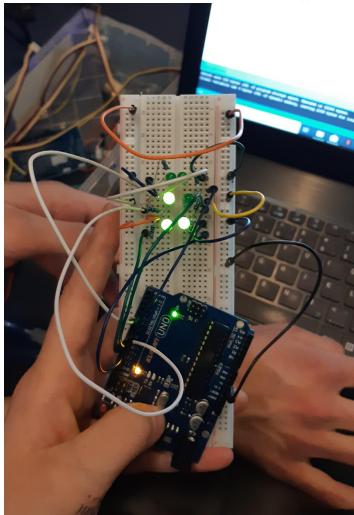
Kathrine von Friedl

Projects

BUMP (UNDER DEVELOPMENT)

Hack The Valley | Scarborough, ON | March 2019 - August 2019

1st Place Hack / Best use of the Qualcomm Snapdragon Board / Best IoT hack



Feel it to believe it! Bump is an IoT project which enables visually impaired people to become more independent. Bump features a 2 by 3 matrix of solenoids (LEDs for our demo) that can be activated to output different braille characters (solenoids can move up and down based off a current running through it). Our text to braille conversion is then used in three features. Using Twilio, the visually impaired may use any SMS enabled texting service.

Whenever a text comes in, a buzzer sounds to alert the user. Once a button has been pressed, the text message is displayed character by character as braille (with 1-second delays between). Users can also read articles online as braille using an HTML parser. Using a camera and Google vision API, objects are identified and described in braille. The braille matrix itself allows a user to suspend their finger above the matrix (rather than having an individual feel the characters as they move their finger along a line). We present to you a cost-effective simple and easily deployable hardware hack that very well can change the world.

Video demos:

<https://lnkd.in/gnDgSzk>

<https://lnkd.in/gSVa3Mm>

BREADCRUMBZ

UOttahack | Ottawa, ON | Jan 2019

Winner Top 5 hacks



BreadCrumbz is a route-mapping web application using express.js that employs Restful APIs. The purpose of this app is to make volunteering easier and use technology to move food resources around our cities. The end goal is to see less food in restaurant green bins and more food passed out to the homeless. When the user enters their final route destination, our program utilizes many different google maps APIs to calculate the most efficient route to pickup leftover food from a restaurant that broadcasted their availability via a webpage and nearby homeless shelters from the final destination. Our algorithm optimizes the route to reduce driving time to make it as convenient as possible. Twilio's API then contacts both the driver and homeless shelter to determine if the package was actually delivered (or stolen). Since it was built using RESTful APIs and micro-services, it is highly scalable and can respond to increase in demands seamlessly.

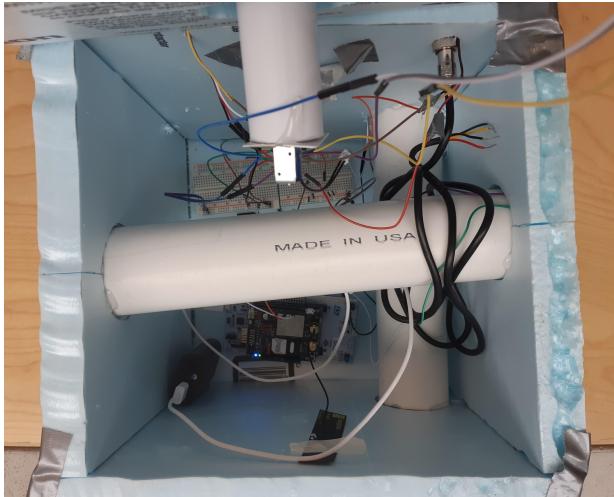
Kathrine von Friedl

Projects

EWT

Make UofT / Toronto, ON / Feb 2019

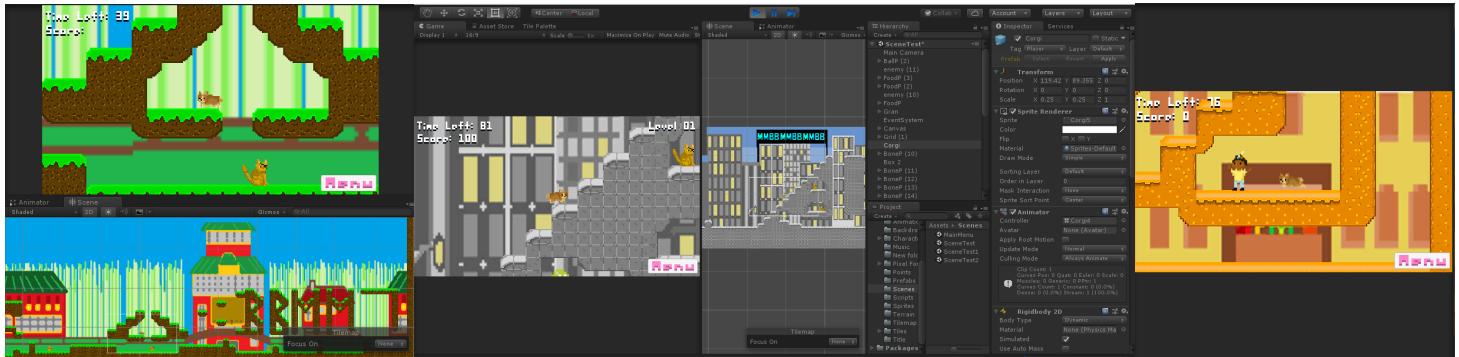
Best Use of Twilio's API



EWT is an emergency weather transponder hardware hack entered at MakeUofT (the largest makeathon in all of Canada). Using this technology, weather and climate updates can now be cheaply provided to third world countries, remote locations and even a getaway cottage. EWT is equipped with 8 sensors including humidity & temperature (available readings for both inside and outside of the box), light intensity sensor, two wetness sensors (one for detecting moisture on the surface of EWT and another which works with a solenoid to collect water and dispense it while monitoring rainfall levels) and two gyros each in their own wind tunnel (to understand where wind is coming from). The box uses Twilio's API to allow this information to be relayed to subscribed users via SMS. The best part: EWT is serverless and easily deployable in over 180 countries! Using Microsoft Azure and embedded Twilio functions, EWT can remain in any remote location providing there are cell towers. The future vision for EWT is to implement machine learning to detect weather patterns in microenvironments and to have the entire system powered by solar panels.

HOME

Global Game Jam/ Waterloo, ON / Jan 2019 - Feb 2019

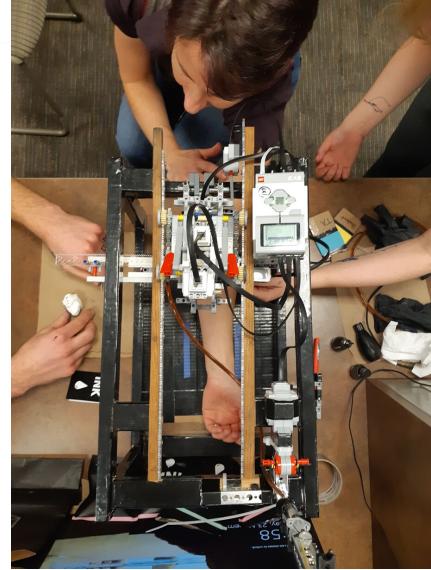
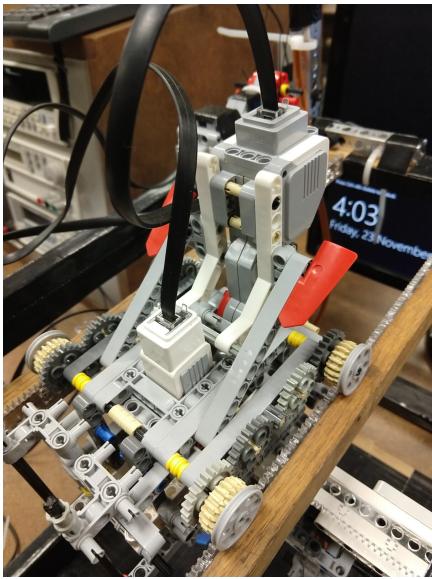


Home is a 2D platformer game developed using Unity in 24 hours. The game features custom sprites and audio following a dog character that must travel the globe to find their family members. The game was written using custom C# scripts in the Unity game engine. Game basics such as health, score accumulation, enemy killing, checkpoints, scene selection and NPC movement were all featured.

Katherine von Friedl Projects

INKBOT

University of Waterloo Mechatronics Engineering Course Project | Waterloo, ON | Oct 2018- Dec 2018



Using a Lego Mindstorms kit and appropriate semi-permanent blue-algae solution (sponsored by InkBox), automated semi-permanent tattoos are possible. Our tattoo robot, InkBot, can ease the strain on human tattoo artists, and provide straight lines and accurate angles in geometric designs. InkBot is a two-axis, suspended, rack and pinion machine that squeezes ink onto a users arm in preprogrammed geometric designs. It was programmed in C++ and features designs that were made in AutoCAD. The robot was conceptualized and built by a team of 4 and features some custom parts which were built in a woodshop or laser cut.

SELF MOTIVATED BIOASSAY

Woodbridge, ON | Oct 2017- Dec 2017



Hydranth Population Size Complex

Solutio	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11
1a	4	4	4	3	2	2	0	0	0	0	0
1b	4	3	4	2	0	0	0	0	0	0	0
1c	4	4	2	3	2	0	1	0	0	0	0
2a	4	5	6	6	6	6	6	6	7	7	6
2b	4	3	6	7	6	5	4	4	4	4	4
2c	4	6	6	0	0	0	0	0	0	0	0
3a	4	5	5	4	4	4	4	4	4	4	4
3b	4	6	5	4	3	3	3	3	6	5	5
3c	4	4	4	5	5	4	5	2	1	2	2
4a	4	4	4	4	4	4	4	5	3	5	4
4b	4	6	6	7	7	4	8	6	4	6	4
4c	4	4	4	3	4	2	3	2	4	1	1
5a	4	4	4	4	4	4	4	4	4	4	4
5b	4	4	4	4	5	5	4	4	5	5	4
5c	4	4	4	4	5	5	4	4	5	5	4



Directed a chemical and toxicity analysis of the Humber river over a 2 month period. Self-taught the bioassay process using Hydra (small freshwater invertebrate known for immortality) as a test subject. The project featured collections of river water sampled from 5 locations equidistant along the Humber river. Hydra Borealis were placed in groups of 5 of which each group was deposited into 1 of 15 containers with river water (3 containers would exhibit the same water sample). Body morphology was observed in response to chemical presence in the water. Data was cross referenced with local chemical analysis tests. *Note no Hydra were killed in this experiment, they are clones of a single entity, 2 cells thick and immortal (they can revive after their environment returns to favourable conditions). This project is included to emphasize my passion for learning and ability to manage tasks independently.