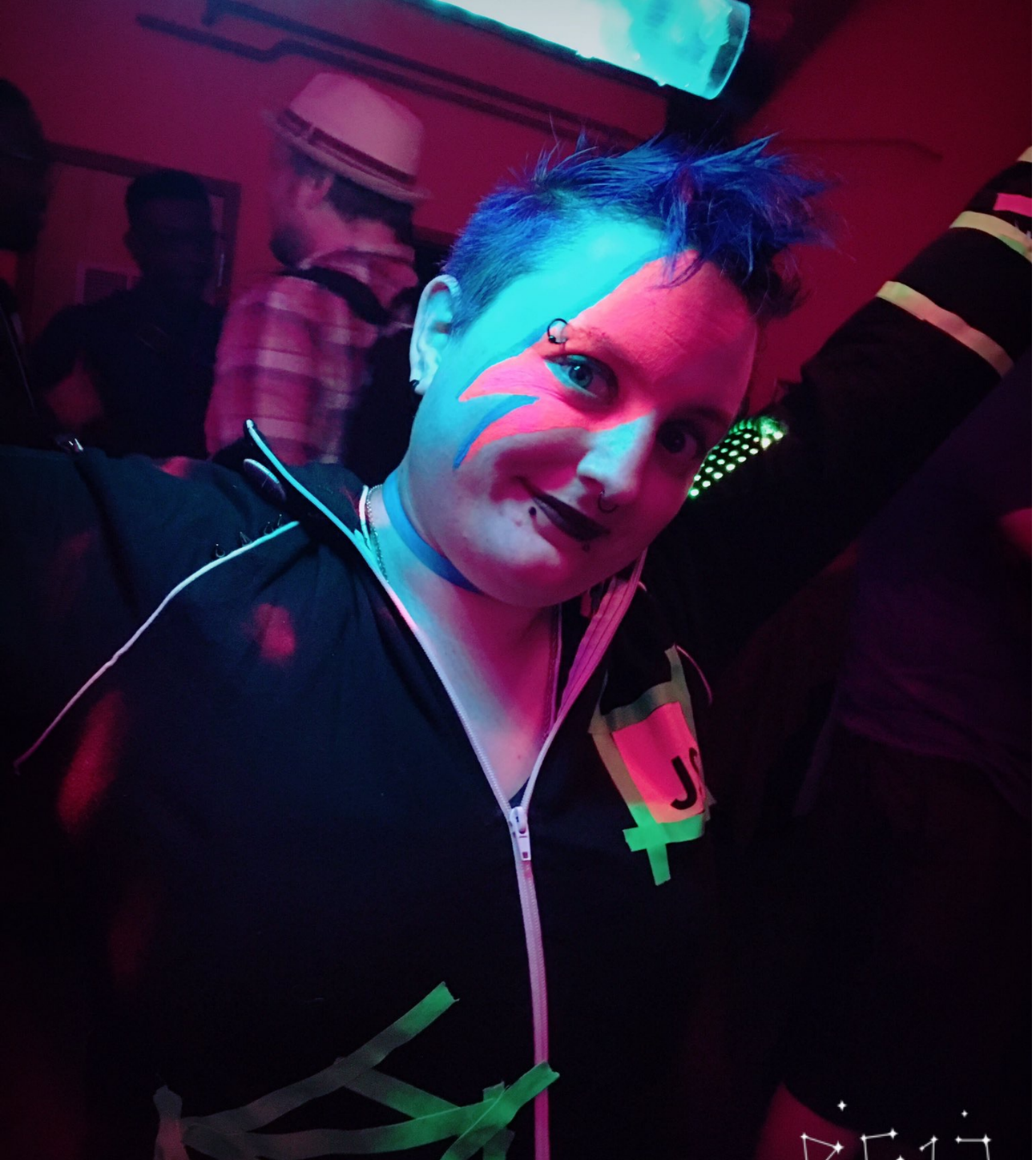
SERVERLESS AND IOT: BEST OF FRIENDS!



ABOUT ME

- "THE NODEBOTANIST"
- DEVELOPER RELATIONS ENGINEER AT IOPIPE
- B.S.E. ELECTRICAL ENGINEERING STUDENT AT ARIZONA STATE UNIVERSITY. HOLDS A B.S. IN COMPUTER SCIENCE
- SPECIALIZES IN WEARABLES AND EDUCATION
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WHAT I MEAN WHEN I SAY "IOT DEVICE"

AN IOT DEVICE IS ANY INTERNET-CONNECTED DEVICE FOR WHICH A WEB BROWSER IS NOT THE MAIN UI (THOUGH IT CAN BE CONNECTED TO THE INTERNET THROUGH SUCH A DEVICE)

FITNESS BANDS, WATCHES, THERMOSTATS, TOASTERS

...BASICALLY ANYTHING THAT ISN'T A PHONE/TABLET/PERSONAL COMPUTER

TWO ENDS OF THE IOT ARCHITECTURE SPECTRUM

1) YOU HAVE A VERY LIMITED DEVICE THAT COLLECTS RAW DATA AND NEEDS TO OFFLOAD IT
2) YOU HAVE A DEVICE THAT IS CAPABLE OF MANIPULATING AND STORING INFORMATION BUT NEEDS TO SYNC WITH THE CLOUD

HOW DOES SERVERLESS HELP IN GENERAL?

- NO NEED TO BUILD OUT ANOTHER INFRASTRUCTURE
- SCALE OUT TO DATA CENTERS WHERE YOUR PRODUCT IS GOING
- USE THE HTTP YOU KNOW AND (MAYBE) LOVE

A NOTE ON JS IN SERVERLESS AND IOT

AS THE JS COMMUNITY FINDS MORE AND MORE WAYS TO RUN JS ON HARDWARE. AND NODE.JS IS QUICKLY BECAMING THE LANGUAGE OF SERVERLESS. I FORSEE A TIME WHEN THERE CAN BE AN IOT STACK THAT IS JS ALL THE WAY DOWN. FOR BETTER OR WORSE.

LET'S TAKE A LOOK AT HOW IOT AND SERVERLESS WORK TOGETHER IN THE EXTREMES

CASE 1: LIMITED MICRCONTROLLER

- EMBEDDED DEVICE. AIMING FOR SIZE AND POWER CONSUMPTION OVER COMPUTE POWER
- GATHERS DATA VIA SENSORS. BUT CAN'T STORE MUCH OR DO MUCH WITH IT WITHOUT HARMING THE POWER CONSUMPTION
- NEEDS TO OFFLOAD DATA AT REGULAR INTERVALS. AND REACT TO COMPUTED RESULTS

EXAMPLE: TESSEL 2 WITH TRACKBALL AND LEDS

- TRACKBALL DATA NEEDS TO BE UPLOADED TO GENERATE A COLOR
- SERVERLESS FUNCTION COMPUTES COLOR BASED ON TRACKBALL DATA AND SENDS IT BACK
- MICROCONTROLLER THEN LIGHTS THE LEDS WITH THE COMPUTED COLOR EVER 5 SECONDS

WHY SERVERLESS HERE?

- INSTEAD OF HAVING MY LIMITED MICROCONTROLLER COMPUTE THE COLOR FROM HUE AND BRIGHTNESS, I LET THE LAMDA FUNCTION DO THAT WORK
- (COLOR MANIPULATION IS ALSO WAY EASIER FOR ME IN NODE >.>)
- MICROCONTROLLER MAKES 1 NETWORK REQUEST 5 SECONDS AFTER A CHANGE IS DETECTED (DEEP SLEEP MODE COULD BE USED!)

EXAMPLE 2: POWERFUL MICROCONTROLLER WITH SYNC

- SMALL LINUX-BASED MICROCONTROLLER AND A KEYPAD
  - DEVICE STORES VOTES FOR PURPLE AND ORANGE. AND OFFLOADS EVERY 5 VOTES
- EVENTUAL CONSISTENCY ACROSS MULTIPLE VATING DEVICES

WHY SERVERLESS HERE?

- ALL I NEED IS A TASK THAT WILL TAKE IN VOTES AND SEND THEM OFF TO BE STORED
- GREAT FOR BOTS THAT HAVE CAMPUTING POWER, BUT WANT TO LOWER REQUEST OVERHEAD

THERE ARE DANGERS!

SECURITY

- BOTH IOT AND SERVERLESS ARE NEW-- MEANING WE'RE FINDING NEW SECURITY ISSUES AS WE GO.
- IOT TENDS TO HAVE BIGGER ISSUES-- SECURING HARDWARE IS A WHOLE DIFFERENT RODEO

WHAT'S NEXT FOR IOT AND SERVERLESS

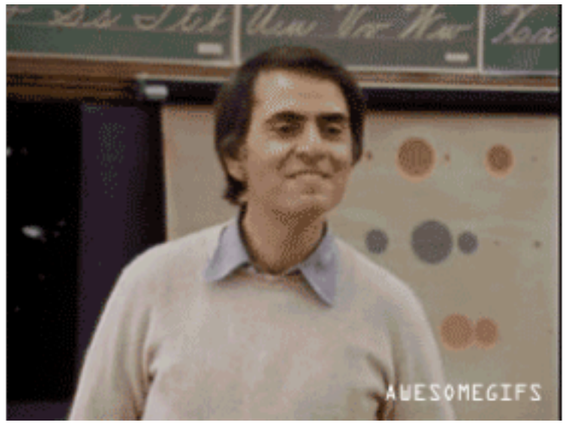
AWS GREENGRASS

- LAMBDA AND AWS TAILORED FOR IOT PURPOSES
  - OTHER PROVIDERS FOLLOWING SUIT

A BETTER NAME FOR SERVERLESS:

SKYNET.

THANKS FOR LISTENING!



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