Tianyu Guo (Ti)

University of Waterloo Mechatronics Engineering

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Skills

Hardware

- PCB Schematic Design, PCB layout design, Soldering, 3D Printing
- Arduino, Raspberry Pi, PLC, FPGAs, ARM based microprocessors
- Machining, Wood shop tools, Laser Cutting

Software

- Proficient: C, C++, AHK, HTML, CSS, Bootstrap, JavaScript
- Familiar: Java, MatLab, Python, Node.JS, Heroku, MySQL
- Other: Photoshop, Illustrator, Visual Studio, GIT, LabView

Additional

- UART, I2C, SPI, NFC protocols
- EEG and EMG technology
- Mac/Linux Terminal
- FMEA, GD&T, Six Sigma
- Eagle CAD, SolidWorks, AutoCAD, Sketchup

Employment History

Innovation Intern – *Khazanah Americas Incorporated. San Fransisco, CA* *2016*

- Developed a search engine that allows employees to easily customize their search in multiple company's business databases that have used by 30% of staff in the office.
- Lead developed a Kinect-based 3D human body scanner that can capture over 90% of users' upper body details, used by company at least 1 time per week.
- Developed camera control interface and automated software for company's Drawing robot project. Used by company at least 2 times per week.
- Represented company in startups events, discuss deals with startups.
- PCB design, machining, **Laser cutting**, 3D modeling, **3D printing**, **Raspberry Pi**, Arduino, **Python**, C, **SSH**, AHK, Heroku, JavaScript, CSS, HTML, Linux.

Hardware Developer - *Neurovative Technologies Inc., (Accelerator Centre) Waterloo, ON* *2014-2016*

- Co-developed company's main product, Vibrant, a wearable therapeutic system, as the 3rd member of the company.
- **Data analysis** with accelerometer, circuit design and building, **Arduino**, **Bluetooth Low Energy,** read **data sheets,** and tested sensors and actuators
- Assisted with the company's Android companion app, using Java.
- **Represented the company** in Shenzhen, China during summer 2015 by discussing and investigating cooperation opportunities in vibration motors and **PCB** manufacturing with vendors.

Junior Software Developer - *Symanta Inc., (Communitech) Waterloo, ON* *2014*

- Worked with the Emotiv Brainwave **EEG** Headset, Google Cardboard, Python, and AHK
- Led developed company's mind controlled **virtual reality** gaming system
- Crowd tested the project at KWartzlab hackerspace.

Lab Assistant - *University of Waterloo, Waterloo, ON* *2013*

- Improved the Lab Manual for ECE 351 (Compilers Course)
- Ensured clear structure and drew flow charts for the programming assignments, using **C++**

Projects

Smartphone-controlled smart pillow for sleep tracking and modifying *2015-2016*

- Applied skills in **Arduino**, **Git**, C, **Java**, and data analysing with pressure sensors
- Built compact electrical system embedded in a pillow which utilized Arduino, accelerometers, Bluetooth, **I2C**, **UART**, **EEG** sensor circuit, LCD screen, vibration motors, sd card R/W, etc.

- **Sourcing components** from vendors
- 18 months of research and developments and 4 versions of prototypes. The device is proven to be able to generate sleep activity graph as accurately as top 5 sleep tracking apps on the market.

Real Life Angry Birds Gaming Machine *2014-2015*

- Used **3D modelling** for Design, **Machining**, Arduino, and **Circuit Design**
- Led a group of 5 Engineering students to develop the project to design and build the system

Bluetooth earpiece wireless charging shall *2016 - present*

- Applied PCB manufacturing, full bridge rectifier circuit design, 3d modeling and printing.

Concentration Improvement System (Arduino**, Bluetooth, Java for android, EEG sensor)** *2014-2015*

- Used machining skill to develop a wristband that notifies users when they are not concentrating

Myo EMG controlled RSI treatment system – *Hack the North hackathon (***Bluetooth**, Arduino, C, **UART***)* *2016*

- Co-developed vibration system to correct patients' posture, using data from EMG sensor. Tested and proven effective.

Job Miner Website – *ConUHacks Hackathon (Rapid Prototyping, HTML, JavaScript, CSS, jQuery, and Bootstrap)* *2016*

- Co-developed a website that evaluates jobs for University Students

Activities

Founder of Natruwake Student team – *University of Waterloo Natruwake Bio-Mechatronics Team* *2015-present*

- Led 15 students in developing an **open-source** smart pillow pad (based on pillow project)
- Used GitHub **Version control** and collaboration, 3D modeling & printing, Arduino **machine learning** library, PCD **layout** and **Schematic** design, **MQTT** protocol, **H-Bridge**, and product **crowd testing**, Microsoft **Azure, SolidWorks**.

Co-president in Mechanical and Electrical Lead of Robotics Team - *Waterloo Collegiate Institute* *2013-2015*

- Led building a robot car, **rapid prototyping** with sensors, **dc motors**, Raspberry Pi to control Arduino, machining for making the body, circuit design, **OpenCV**

Founder and co-organizer of Arduino Workshop - University of Waterloo *2015*

- Organized, Designed, and gave hands-on lectures in Arduino project. Helped more than 200 students.

Program Designer and Instructor – Stack Family YMCA Robotics Camp *2015-2016*

- Led designed and built 16 projects involving Lego Mindstorms and Arduino for young students

Hardware Executive at First Robotics Team 2702 - *Eastwood Collegiate Institute* *2014-2015*

- Used **lathes**, **drilling machines**, **table saw**, **milling machines**, **SolidWorks** for designing, prototyping & building robots

Awards & Achievements

President's Award - *University of Waterloo* *2015*

- Awarded for founding UW-Hardware Workshop (1 of 6 recipients of the term, one of the youngest recipients in history)

2nd Place Overall - *International Autonomous Robot Racing Competition* *2015*

- From leading Waterloo Collegiate Institute Robotics Team

Gold Medal - *Waterloo Wellington Science and Engineering Fair* *2015*

Education

Candidate for Bachelor of Applied Science

-Honours Mechatronics Engineering at University of Waterloo *2015 – 2020*

- Extracurricular evolvement: Founder of UW Hardware workshop (Helped more than 200 students get start with Arduino), Federation of Student Entrepreneurial Committee, Co-organizer of Meditation Club, Co-organizer of Chinese Canadian heart to heart Club, Toast Master Club, Brain Computer Interface Club, outer club.

Interest

- **Reading**, Project building, Rock Climbing, Biking, Chess, Chinese Calligraphy, following tech trends.