

# JILL AGHYOURLI ZALAT

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## SUMMARY OF QUALIFICATIONS

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- Excellent communication skills demonstrated through academic writing and extracurricular experience presenting technical information to a mixed audience
- Exceptional time management skills demonstrated through internship experience at startup company fulfilling time-sensitive orders
- Proficient critical thinking skills shown through extracurricular and academic design experience

### Technical Skills

- Working knowledge of software programming in the languages **Python, C, and C#**
- Proficiency in the simulation software **SolidWorks, Blender, Unity, and MATLAB/Simulink**
- Excellent knowledge of **Arduino programming**

## EDUCATION

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### Bachelor of Mechanical Engineering: Ryerson University, Toronto, Canada

- Speciality in Mechatronics; Minor in Computer Science
- Dean's List 2019-2020
- **CGPA:** 3.45/4.33
- **Expected Graduation:** 2022
- **Relevant Coursework:** Manufacturing System Control, Manufacturing Fundamentals, Engineering Design, Stress Analysis

## ACADEMIC PROJECTS

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### ELECTRO-PNEUMATIC HOCKEY HELMET IMPACT TESTER, 2020

- Supervised design analysis process of electro-pneumatic system to simulate 3000 hits on each side of a hockey helmet within an 8-hour workday
- Performed risk assessment analysis on helmet tester design and introduced failsafe measures into electro-pneumatic system, leading to overall safer design

### BALL-BEAM CONTROL SYSTEM, 2020

- Modeled ball-beam system in Simulink, simulated system responses, and obtained system responses given a varying gear angle parameter
- Designed PID system to stabilize ball-on-beam motion, obtain a settling time of 3 seconds and overshoot of less than 5%

### DESIGN OF A COAL-GEOTHERMAL POWER PLANT, 2019

- Collaborated with peers to design a geothermal and fuel-based power plant, achieving energy needs for a population of 40,000 and optimal trade-off between efficiency, environmental sustainability, and cost effectivity
- Performed thermodynamic analyses of Rankine and Brayton cycles critical to selection of plant components, meeting energy requirements of 23 MW and allowing for future expansion of power plant if required

### DESIGN OF A LEAF MANAGEMENT SYSTEM, 2018

- Completed a 200 page technical report outlining research and design of a new leaf management system that could be used in Toronto and across the GTA
- Drafted several concept designs, using an iterative process to complete final design of a lightweight leaf management device that limits sound produced, is environmentally friendly, and is overall a more usable product for a more diverse range of user groups

## SOFTWARE PROJECTS

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### **ROCKET JUMP GAME**, C#, 2021 (in progress)

- Created 2D game with Flappy Bird style mechanics utilizing Unity game engine
- Enhanced knowledge of basic game development principles, including the use of rigid bodies, mapping controls, implementing game assets, and level design

### **CALIFORNIA HOUSING PRICES PREDICTOR**, Python, 2020

- Wrote machine learning model in Python using TensorFlow to predict median housing price in any district in state of California given other metrics
- Improved understanding of machine learning principles such as multiple regression problems and fundamental principles

### **AUTOCOMPLETE**, Python, 2020

- Wrote program to create trie data structure encompassing all words in the American English dictionary, where each node represented a letter or a word
- Implemented autocomplete function to recursively explore trie and return a list of all words in the dictionary that match the user-inputted prefix

### **SNAKE GAME**, Python, 2020

- Created snake game using object oriented programming principles, where snake display moves after every time user inputs position into console
- Implemented apple object that randomly spawns on board display, and causes snake object to grow larger
- Implemented exceptions where game quits after snake runs into itself, or crashes into the edge of the board

### **CROSSWORD GENERATOR**, Python, 2019

- Created command-line crossword generator where words are placed in alternating horizontal and vertical positions on a crossword board

## EXTRACURRICULAR INVOLVEMENT

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### **PROPULSION TESTING SPECIALIST**, Ryerson Helium

*Sept. 2019 - April 2020*

- Reduced overall cost by 30% by drafting new compact testing rig design in SolidWorks to be used on flight vehicle, minimizing number of parts required and removing need for custom-fabricated components
- Performed Stress Analysis simulation on testing rig in SolidWorks in order to meet load requirements, ensuring safety of operation for other team members during testing process as well as vehicle operation
- Aided in building prototype of flight vehicle showcased in GoFly \$1,000,000 design competition in February 2020

### **PROPELLANT MANAGEMENT LEAD**, Ryerson Propulsion Group

*Sept. 2018 - Feb. 2019*

- Spearheaded research and design efforts for design of pressure vessels for bi-propellant rocket system, facilitating completion of overall design in record three months
- Presented findings in Preliminary Design Review to engineering advisors from the Canadian Space Agency

## PROFESSIONAL EXPERIENCE

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### **HARDWARE ENGINEERING INTERN**, Movia Media

*Sept. 2020 - Dec. 2020*

- Provisioned 50 GPS hardware devices under tight deadlines in order to facilitate launching of 5 advertising campaigns across North America
- Introduced modification to enclosure design, ensuring greater durability of device components and reducing frequency of device maintenance send-backs
- Trained incoming interns on device build procedures and best company practices