John M Thompson Innovation Fund Application

<u>Eligibility:</u> Western Engineering student with tuition paid in full.

1. Principle Innovator Name: __Bryan Heddle_____ Email: __Bheddle4@uwo.ca_____
2. Verify all Western tuition has been paid in full: yes____
3. Engineering Department: __Mechatronics_____
4. Individual __Yes____ or Team _____ (if team list all teammates name and emails)

5. Summary of idea (~100-200 words)

The goal is to create a two foot tall humanoid robot that is capable of completing tasks and navigating its surroundings. This robot will use SLAM to navigate it's surroundings and AI for object recognition. Implementing an LLM for conversing is also a goal. Besides the AI side of the robot, It will have 4 joints, with each joint having 2 DOF. It will be able to spin the torso and head around. The robot will use a variety of sensor, and sensor fusion to achieve the tasks that I have planned. An example task would be for the robot to wave at you, walk a certain distance, or walk to an object.

Ever since I was a kid I've enjoyed robotics, and especially toy robots. Although all the toy robots weren't really the greatest. Essentially my goal here is to create a "toy" robot of the future, a very expensive "toy" robot though.

6. How will you measure success? (~100-200 words)

Since this is such a large project I will measure success in steps. The first step is the electro-mechanical design, the success of it will be based off how well the robot is able to move, and how much power is required to move each limb. I will be using smaller motors paired with gear systems to increase the torque of the motors, hoping to have smaller overall power consumption, while still allowing for decent movement. This is due to the real life constraint that toy robots would normally have. The next step which is quite a large one, is the software/AI, the success of this step will be measure by how well the robot is able to navigate it's environment. It will also be measured on response time of the robot after it is told to do something, computing resources, and size of the AI model/models.

7. For open source projects provide link to documentation (including BOM, CAD, electronic schematics, software and OS license) or OSHWA certification #: I have yet to start the CAD for this project.
8. For proprietary projects – link to provisional patent or application #:
9. Value of funds requested: $__1971.92_____
10. Use of funds. Attach a bill of materials including component, number, cost and source url and/or processing quotes.

By sending this application you agree to use the funds for the stated purpose and report back to the Thompson Centre on outcomes if successfully awarded funding.

Email completed forms and supporting cost information to:
joshua.pearce@uwo.ca