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| UTS SAFE WORK METHOD statement (SWMS) |

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| 1. **FACULTY/SUBJECT** | |
| Faculty/Subject title | 41013 Robotics |
| Subject supervisor/coordinator | Gavin Paul |
| SWMS prepared by | Callum Oldfield, Esteban Andrade, Ajal Singh |

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| 1. **WORK ACTIVITY DESCRIPTION** | | | | | | |
| Describe the work activity E.g. Operating, Handling, Using.. Include names of hazardous equipment, substances or materials used,  and any quantities and concentrations of substance(s) or reaction products. | The group will be programming and running the Fetch robot for Assignment 2 of Robotics. The objective of the robot is to travel to a table, detect rubbish, pick them up and put them in the bin. These items will include coke cans. This assignment will require a large enough space for the robot to travel to and perform its tasks. | | | | | |
| 1. HAZARDS: Choose those hazard types that will need to have control measures in Section 4 | | | | | | |
| **Work Environment**   * Working in Remote Locations * Working Outdoors/fieldwork * Clinical/Industrial setting * Poor ventilation/Air quality * Temperature extremes * Working at Height * Slip/Trip/Fall hazards | | **Plant**   * Noise * Vibration * Working with compressed air * Lifts Hoists or Cranes * Moving parts (Crushing,friction, cut, stab, shear hazards) * Pressure Vessels or Boilers | | **Chemical**   * Hazardous Chemicals use * Skin/eye irritant * Sensitiser * Mutagen * Carcinogen * Toxic to reproduction * Aquatic toxicity * Toxic * Corrosive * Dangerous when wet | | **Ergonomic/Manual Handling**   * Repetitive or awkward movements * Lifting heavy objects * Over reaching * Working above shoulder or below knee height * Poor workstation set up |
| **Electrical**   * Plug in equipment * High voltage * Exposed wiring * Exposed conductors | | **Radiation**   * Ionising Radiation * Non-ionising radiation (Lasers, Microwaves, Ultraviolet light) | | **Biological**   * Sharps/Needles * Cytotoxins * Pathogens/infectious materials * Infectious materials * Communicable diseases * Animal/insects * Work with fungi/bact/viruses | | **Psychosocial**   * Aggressive or violent clients/students * Working in isolation * Working with timeframes * Staffing issues |
| 1. **CONTROLS MEASURES: Choose those that apply for hazards identified** | | | | | | |
| **Eliminate/Isolate/Substitute / Engineering Controls**   * Remove hazard * Restrict access * Redesign equipment * Guarding / Barriers / Fume Cupboard / exhaust * Biosafety cabinet * Use safer materials/substances * Ventilation * Regular maintenance of equipment * Redesign of workspace / workflow | | | **Admin specific: Licenses/permits Work Methods**   * Training Information or Instruction * Licensing or certification of operators * Test and tag electrical equipment * Restricted access * Regular breaks * Task rotation * Work in pairs * Document Chemical risk assessment * Ladder / Sling register | | **Emergency Response Systems**   * First aid kit * Chemical spill kit * Safety shower * Eye wash station * Emergency Stop button * Remote Communication Mechanism | |
| **Other controls not listed**  **Light or siren emmiting from robot to inform people that the demonstration is taking place.** | | | | | | |
| 1. **PPE REQUIRED (Tick those that apply)** | | | | | | |
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| http://www.orr.uts.edu.au/images/pictograms/protection/respiratory.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/head.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/hair.png | | | | | | |
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| 1. **EMERGENCY EQUIPMENT** | | | | | | |
| http://www.orr.uts.edu.au/images/pictograms/equipment/eyewash.pnghttp://www.orr.uts.edu.au/images/pictograms/equipment/spill.pnghttp://www.orr.uts.edu.au/images/pictograms/equipment/shower.png | | | | | | |
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| 1. **work activity steps** |
| **before you start:**   1. **Have all team members and supervisors check the code to ensure the robot will travel at the correct speed and will not collide with itself or other objects** 2. **request a designated area for the robot demonstration. minimum of 3m x 3m.** 3. **ensure everyone in the vicinity is aware of the demonstration** 4. **Ensure and verify status of connectoin between fetch robot and master uri** 5. **Ensure that all Emegerncy Connections and safety systems are working correctly**   **steps in work activity:**   1. **Have at least 2 people observing the demonstration (preferably from different angles)** 2. **Set up connectio between ROS core and nodes for execution and monitoring** 3. **verify progress and completition of task** 4. **very completition of task before shutting the connections down.**   **emergency procedures:**  **Have a team member to have a remote emergency button to stop all robot tasks**  **training required:**   1. **Ensure knowledge of fetch robot specifications and limitations** 2. **ENsure knowledge to motion of all joints of fetch robot** |

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| 1. **sign off** | | |
| **prepared by:**  **NAME: Callum Oldfield/ Esteban Andrade/ Ajal Singh** | **Supervisor**  **Name: Gavin Paul** | **Date: 29/09/20**  **Review Date:** |