



Activity name	Maze Runner	Faculty	FEIT	School / Centre / Department	MME
Activity description	Using a UR3 robotic arm to autonomously solve a provided maze.				
Date of assessment	06.03.2025	Version No.	0	Next review date	
Form completed by/Assessor:	Ryan Thomas / Hugh Radvan / Cristian Corso / Nicholas Uremovic	Students	Supervisor	Tan Huynh / Ravi Ranasinghe	
Location(s) of activity, e.g. CB01.01	CB11.10.403	Lab Manager/Technical Services (or equivalent) of activity location (if relevant):	Felipe Gutierrez	Planned activity date(s):	13.03.2025 to 15.05.2025
Persons at risk	Students / Staff / Visitors	Persons consulted (consider anyone with access to or affected by the activity)			
List any Reference legislation, standards, codes of practice, manufacturer's guidance etc used to help identify hazards and control measures relevant to this activity <i>Refer to the H&S Policy, Codes of Practice, Australian Standards</i>			N/A		

Instructions: Use the guidance notes at the end of this document to help complete this table


TASK List and describe hazardous task/activity/process/step/equipment	ASSOCIATED HAZARD(S)	INHERENT HARM Harm that could occur from these hazards if controls fail or are not in place.	EXISTING CONTROL MEASURES Control measures currently in place to minimise risk	RISK LEVEL (H,M,L)	PROPOSED CONTROL MEASURES Additional control measures needed to reduce risk further	TARGET DATE To implement proposed controls	RESIDUAL RISK LEVEL (H,M,L)
Electrical cables mishandled	<ul style="list-style-type: none">• Electrocution• Fire hazard• Tripping hazard	<ul style="list-style-type: none">• Severe injury or death from electrocution• Burns or injury from fire• Physical injuries from tripping or falling	<ul style="list-style-type: none">• Room emergency electrical cut-off button• Fire extinguisher• Regular inspection and maintenance of cables• Proper cable management	L	<ul style="list-style-type: none">• Inspect electrical cable integrity• Ensure cables are properly plugged in• Do not operate faulty equipment	Date of activity	L

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Leaving the robot arm unattended whilst powered on	<ul style="list-style-type: none"> • Unintended movement • Collision with objects or people 	<ul style="list-style-type: none"> • Injury to personnel from unexpected movement • Damage to equipment or workspace 	<ul style="list-style-type: none"> • Robot E-stop button • Safety barriers • Lab card access restricted to inducted individuals 	M	<ul style="list-style-type: none"> • Disconnect robot from power when not in use 	Date of activity	L
Using inappropriate load on the robot	<ul style="list-style-type: none"> • Damage to the robot • Unexpected robot behaviour 	<ul style="list-style-type: none"> • Damage to the robot and workspace • Risk of injury from falling objects or mechanical failure 	<ul style="list-style-type: none"> • Robot specification sheet • Monitoring and supervision in lab 	L	<ul style="list-style-type: none"> • Train operator on load limits 	Before date of activity	L
Robot arm moves unexpectedly	<ul style="list-style-type: none"> • Unexpected or erratic movement • Collision with objects or people 	<ul style="list-style-type: none"> • Injury to surrounding personnel • Damage to the robot or workspace 	<ul style="list-style-type: none"> • Robot E-stop button 	M	<ul style="list-style-type: none"> • Simulate robot movements before implementing code in real robot 	Before date of activity	L
Incorrect manual handling	<ul style="list-style-type: none"> • Strain injuries • Dropping heavy objects 	<ul style="list-style-type: none"> • Musculoskeletal injuries • Damage to equipment or objects being handled 	<ul style="list-style-type: none"> • Increased awareness through lab inductions 	L	<ul style="list-style-type: none"> • Use of mechanical aids where possible • Use of appropriate manual handling techniques 	Date of activity	L
Operating robot while tired or distracted	<ul style="list-style-type: none"> • Reduced attention and slower reaction times • Higher likelihood of mistakes 	<ul style="list-style-type: none"> • Increased risk of accidents leading to injury or equipment damage 	<ul style="list-style-type: none"> • Lab access is restricted from 8 am – 6 pm • Monitoring and supervision in lab 	M	<ul style="list-style-type: none"> • Get adequate rest before operating robot • Do not operate robot if you are unsure 	Date of activity	L
Operating robot around surrounding people	<ul style="list-style-type: none"> • Collision with people 	<ul style="list-style-type: none"> • Injury to surrounding people 	<ul style="list-style-type: none"> • Robot E-stop button • Delegated zoning • Lab card access restricted to inducted individuals 	M	<ul style="list-style-type: none"> • Announce impending robot movement to surrounding people • Safety barriers 	Date of activity	L

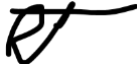



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Loosely fitted end-effector	<ul style="list-style-type: none"> • End-effector falling off 	<ul style="list-style-type: none"> • Injury to surrounding people • Damage to equipment 	<ul style="list-style-type: none"> • Availability of appropriate fastening equipment 	L	<ul style="list-style-type: none"> • Verify end-effector is fastened properly 	Date of activity	L
Disorderly working environment	<ul style="list-style-type: none"> • Tripping and falls • Distractions 	<ul style="list-style-type: none"> • Physical injury 	<ul style="list-style-type: none"> • Laboratory regulations • Lab inductions • Bag storage bays 	M	<ul style="list-style-type: none"> • Clean workspace regularly 	Date of activity	L

Emergency preparation and response					
EMERGENCY List and describe foreseeable potential emergency situations	INHERENT HARM Harm that could occur from these hazards if controls fail or are not in place.	EXISTING CONTROL MEASURES Control measures currently in place to minimise risk	PROPOSED CONTROL MEASURES Additional control measures needed to reduce risk further	TARGET DATE To implement proposed controls	RESIDUAL RISK LEVEL (H,M,L)
Electrical failure	Risk of electrocution, fire hazard, potential damage to equipment.	Emergency electrical cut-off button in laboratory	Inform lab supervisor and technical staff immediately	Day of activity	L
Robot Malfunction (Unexpected Movement)	Injury to personnel	Robot e-stop button	Report the malfunction to the supervisor before resuming operations	Day of activity	L
Fire	Injury to personnel	Accessible fire extinguisher Emergency evacuation plan	Ensure no flammable materials are placed near equipment	Day of activity	L

Sign-off and Approval						
Form/Assessor Author:	Ryan Thomas	Reasonably practicable control measures identified and implemented	Signature		Date	06.03.2025
Responsible supervisor's* Name:		Satisfied that control measures will reduce risk to an acceptable level	Signature		Date	

*Responsible supervisor is the person with control/authority over the activity

Acknowledgement of Understanding				
Persons performing the activity/tasks sign that they have read and understood the risk assessment.				
Note: For activities which are low risk or include a large group of people (e.g. open days, BBQ's, student classes etc), only the persons undertaking the key activities should sign below. For all others involved, the information can be covered by other methods (for example a safety briefing, induction, and/or safety information sheet).				
Student / Staff name	ID	Date	Signature	Remarks
Ryan Thomas	13938802	06.03.2025		Nil
Hugh Radvan	13549340	06.03.2025		Nil
Cristian Corso	13549237	06.03.2025		Nil
Nicholas Uremovic	14174268	06.03.2025		Nil

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Guidance notes for completing the risk assessment

TASK

Briefly describe hazardous tasks involved in this work activity – For example, Operating, Handling, Using ... (Include names) of hazardous equipment, substances or materials used, and any quantities and concentrations of substance(s) or reaction products.

ASSOCIATED HAZARDS

Manual Handling – moving objects, repetitive movements, lifting awkwardly, lifting heavy objects

Work Environment – extremes in temperature, work at height, explosive atmosphere, slippery surfaces/trip hazards, work load, work alone, work after hours, confined spaces, infrastructure

People – potentially violent or volatile clients/interviewees, harassment, bullying, victimisation, poor culture

Environmental – emissions to atmosphere, discharge to soil and water bodies (including stormwater run-off), nuisance noise & odour, poor ventilation/air quality

Plant & Equipment – noise, vibration, dust, moving parts (crushing, friction, stab, cut, shear), pressure vessels, lifts/hoists/cranes, sharps, maintenance, design/assembly, AEV/Drone, hot work

Electrical – plug-in equipment used in 'hostile' work environment, exposed conductors, high voltage equipment

Chemical – hazardous substances, dangerous goods, fumes, dust, compressed gas, hazardous waste

Biological – exposure to bodily fluids/infectious materials, pathogenic microorganisms (bacteria, viruses, parasites, fungi), security sensitive biological agents, sharps/needles, animal bites and scratches, allergies to animal bedding, dander and fluids

GMOs – dealings with genetically modified organisms

Cytotoxins – carcinogens, mutagens or teratogens

Radiation (ionizing) – Ionizing radiation source such as radioactive substance or radionuclide, or irradiating apparatus

Radiation (non-ionizing) – including lasers, microwaves or UV light

INHERENT HARM

Provide details of the harm that could be caused to people or the environment if something goes wrong.

For example: inhalation of fumes, laceration, injury to back, infection, burns to skin or eyes.

Think about what could happen if controls fail or are not in place.

EXISTING CONTROL MEASURES

This is existing measures in place to reduce risk to an acceptable level. Apply the "Hierarchy of Controls", listed below, when deciding the best control measure to apply. Control types closer to the top of the list are preferable.

1. **ELIMINATE THE HAZARD.** For example, work from the ground with a long-handled tool instead of a ladder thus eliminating work at height.
2. **SUBSTITUTE THE HAZARD.** For example, use a less dangerous piece of equipment or chemical.
3. **ISOLATE THE HAZARD FROM PEOPLE.** For example, move a noisy equipment into a room that is not accessed when it is in operation.
4. **USE ENGINEERING CONTROLS.** For example, use a fume cupboard for chemicals, use a guard for rotating parts.
5. **USE ADMINISTRATIVE CONTROLS.** For example, change work practices, provide training, use signage, develop a safe work method statement.
6. **USE PERSONAL PROTECTIVE EQUIPMENT (PPE).** For example, respirator, hearing protection, gloves. Training and information is required for the use of PPE.

PROPOSED CONTROL MEASURES

List control measures not currently in place but you plan to put in place before the activity starts.

RISK LEVEL (High / Medium / Low)

The level of risk can be determined by combining consequence and likelihood using the risk matrix below. Residual risk is the level with all control measures in place (existing and proposed). It should be reduced to a level acceptable by management.

CONSEQUENCE OF HARM - This is how bad it will be if something does go wrong e.g. the number of people that could be harmed, the severity of injury.

LIKELIHOOD OF HARM - Chance of harm occurring is affected by the duration of the activity and its frequency; the number of people doing the activity and the level of exposure to the hazard.

For more information on risk determination refer to the [UTS Risk Management Procedure](#)

			Health & Safety Risk				
Likelihood	The risk is expected to occur in most circumstances	Almost certain	Moderate	High	High	Critical	Critical
	The risk will probably occur in most circumstances	Likely	Moderate	Moderate	High	High	Critical
	The risk should occur at some time	Possible	Low	Moderate	Moderate	High	High
	The risk could occur at some time	Unlikely	Low	Low	Moderate	Moderate	High
	The risk may only occur in exceptional circumstances	Rare	Low	Low	Low	Moderate	Moderate
			Insignificant	Minor	Moderate	Major	Catastrophic
			Non-injury incident or first aid treatable injury only	Illness or injury that requires medical attention leading to 0 to 10 days off work but does not permanently impact health or wellbeing of an individual	Injury or ill health requiring medical attention leading to over 10 and up to 20 days off work but does not permanently impact health or wellbeing of an individual	Injury or ill health requiring hospital admission leading to over 20 days off work but does not permanently impact health or wellbeing of an individual	Single or multiple deaths or a serious injury that permanently impacts health and wellbeing of an individual
			Consequence				