

| <b>Risk Assessment</b>                     |  |                   |   |
|--|--|-------------------|---|
| <b>Risk Assessment for the activity of</b> | <b>Southampton Robotics Outreach RoboHack 2024</b>   |                   | <b>Date</b> 3 <sup>rd</sup> -5 <sup>th</sup> May 2024 |
| <b>Unit/Faculty/Directorate</b>            | <b>Electronics and Computer Science</b>  | <b>Assessor</b>   | <b>George Peppard</b>                                 |
| <b>Line Manager/Supervisor</b>             | <b>Tommy Poll</b>  | <b>Signed off</b> | <b>Tommy Poll</b>                                     |
| <b>Details/Comments</b>                    | <p>This event is held in the Boldrewood B177 Design Studio, with additional use of some surrounding seminar/lecture rooms for attendee break/welfare facilities.</p> <p>In advance of the event, the Central Security Manager and Supervisor, as well as the Building Manager will be notified of the names and email addresses of the event attendees. Out of hours <b>no additional attendees</b> than those who have registered in advance will be permitted on-site. During the hours of 8am-11pm visitors will be permitted but <b>must</b> sign in and out with the organisers.</p> <p>All event organisers are to be made aware of the procedures to be taken in the case of an emergency and will remain in contact with the University Security CCR by telephone throughout the event.</p> <p><b>No lone working is permitted whatsoever.</b> At all times there will be at least two people on-site including at least one event organiser. Attendees with mobility impairments (PEEPs) are not included in this number – there must be an additional two people always present if this is the case, including one event organiser. See the relevant sections below for information on the management controls implemented to defend against the inherent risks of working on-site with reduced staff.</p> <p>Any incidents and near misses are to be reported immediately to security and the building manager and a H&amp;S report is to be filed.</p> <p><b>In an emergency dial 999, and then contact the CCR ext. 3311</b><br/> <b>First aid is available from University Security (CCR ext. 3311)</b></p> <p>A copy of this risk assessment is to be read by all attendees, and the attached sheet signed.<br/> <b>This is document “B”.</b></p> |                   |   |

| <b>PART A</b>                              |                                 |   |                            |        |       |  |                            |        |       |   |
|--|---------------------------------|---|----------------------------|--------|-------|--|----------------------------|--------|-------|---|
| <b>(1) Risk identification</b>             |                                 |   | <b>(2) Risk assessment</b> |        |       |  | <b>(3) Risk management</b> |        |       |   |
| Hazard                                     | Potential Consequences          | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)  | Residual                   |        |       | Further controls (use the risk hierarchy)   |
|  |                                 |   | Likelihood                 | Impact | Score |  | Likelihood                 | Impact | Score |   |
| 1. Fire.                                   | Burns. Smoke inhalation. Death. | Event attendees.<br>Staff. General public.  | 3                          | 5      | 15    | Standard University fire procedures in place. Venue capacity is not to be exceeded. Mobility impairment evacuation plan in place ahead of the event (PEEP).  | 2                          | 5      | 10    | 1&2) All attendees to receive fire briefing upon arrival including call points, evacuation routes, assembly point. Register of attendees to be kept and taken to assembly point in case of fire.  |
| 2. Accident or injury whilst lone working. | Minor or severe injury. Death.  | Event attendees.<br>Staff.  | 3                          | 5      | 15    | Lone working is strictly forbidden. At least two people including one member of event staff are always on-site. Security informed when building vacated (e.g. on setup days where only staff are attending). | 2                          | 5      | 10    | 2&5) Non-working spaces like break rooms patrolled regularly by event staff. Event register to be kept including sign-in and sign-out sheet, and regularly reconciled against people in the room. |

| <b>PART A</b>   |  |   |                            |        |       |   |                            |        |       |  |
|---|--|---|----------------------------|--------|-------|---|----------------------------|--------|-------|--|
| <b>(1) Risk identification</b>  |  |   | <b>(2) Risk assessment</b> |        |       |   | <b>(3) Risk management</b> |        |       |  |
| Hazard  | Potential Consequences   | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)   | Residual                   |        |       | Further controls (use the risk hierarchy)  |
|   |  |   | Likelihood                 | Impact | Score |   | Likelihood                 | Impact | Score |  |
| 3. Slips, trips and falls due to trailing cables, spills, other trip hazards. | Bruises, minor or severe injury.                                   | Event attendees.<br>Staff. General public.  | 4                          | 4      | 16    | Good housekeeping to be maintained. Cables to be routed avoiding thoroughfares where possible and taped down securely using good quality contrasting tape. Areas to be kept clear of trip hazards. Spills to be cleared up immediately. | 2                          | 4      | 8     | 4&5) Event patrolled regularly by staff who will ensure there are no visible trip hazards or spills. Event space inspected prior to event starting (and attendees arriving). |
| 4. Manual handling.   | Sprains, musculoskeletal injuries, lacerations, bruises, crushing. | Event attendees.<br>Staff.  | 3                          | 3      | 9     | Event staff trained on manual handling procedures and good practice.  | 2                          | 3      | 6     | 3) Attendees briefed and told to request assistance if they are not comfortable lifting or moving equipment. Alternative arrangements to be made if items cannot be moved.   |
| 5. Personal injury and illness (existing).                                    | Existing conditions worsening and/or requiring medical attention.  | Event attendees.<br>Staff. General public.  | 2                          | 3      | 6     | First aid kits available locally. First aid available from University Security (x3311).   | 2                          | 2      | 4     | N/A  |

| <b>PART A</b>   |  |   |                            |        |       |   |                            |        |       |  |
|---|--|---|----------------------------|--------|-------|---|----------------------------|--------|-------|--|
| <b>(1) Risk identification</b>                            |  |   | <b>(2) Risk assessment</b> |        |       |   | <b>(3) Risk management</b> |        |       |  |
| Hazard  | Potential Consequences   | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)   | Residual                   |        |       | Further controls (use the risk hierarchy)  |
|   |  |   | Likelihood                 | Impact | Score |   | Likelihood                 | Impact | Score |  |
| 6. Food handling, poor food hygiene, foodborne illnesses. | Minor or severe stomach illnesses. Allergic reactions. Death.                    | Event attendees. Staff. General public.   | 3                          | 5      | 15    | Provision of local hand washing facilities. Catering to be provided only with FSA approved companies. Supervisor on-site when food is served who will hold a valid Level 2 Food Safety & Hygiene Qualification. Allergens to be clearly labelled and cross-contamination prevention methods to be in place. | 1                          | 5      | 5     | 6) Participants with severe allergens to be identified in advance and separate catering provision to be made in a separate area. |
| 7. Ongoing building maintenance.                          | Slips, trips and falls, electric shock, falling debris, collision with vehicles. | Event attendees. Staff. General public.   | 4                          | 4      | 16    | Ongoing maintenance work to be cordoned off. Event staff to be made aware of restricted areas. Confirm no active building work during event.  | 1                          | 4      | 4     | N/A  |

| <b>PART A</b>   |                               |   |                            |        |       |  |                            |        |       |  |
|---|-------------------------------|---|----------------------------|--------|-------|--|----------------------------|--------|-------|--|
| <b>(1) Risk identification</b>                        |                               |   | <b>(2) Risk assessment</b> |        |       |  | <b>(3) Risk management</b> |        |       |  |
| Hazard  | Potential Consequences        | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)  | Residual                   |        |       | Further controls (use the risk hierarchy)                        |
|   |                               |   | Likelihood                 | Impact | Score |  | Likelihood                 | Impact | Score |  |
| 8. Damaged or faulty electrical equipment.            | Electric shock. Burns. Death. | Event attendees. Staff. General public.   | 3                          | 5      | 15    | Users to inspect appliances and ensure they are in safe condition before use. Users informed to not use dangerous appliances and report them to event staff immediately. Technical equipment PA tested before use. | 2                          | 5      | 10    | 7) Electrical appliances to be tested before use by event staff. |
| 9. Unauthorised access. Violence. Damage to property. | Injury.                       | Event attendees. Staff. General public.   | 3                          | 3      | 6     | Building access restricted to valid cardholders. Security support available on x3311.  | 1                          | 3      | 3     | N/A  |
| 10. Tiredness.  | Injury to self and others.    | Event attendees. Staff. General public.   | 4                          | 4      | 16    | Participants encouraged to take breaks at regular intervals. It is not required to stay for the whole event. Event staff to take breaks regularly.   | 1                          | 4      | 4     | N/A  |

| <b>PART A</b>                         |  |   |                            |        |       |  |                            |        |       |   |
|---------------------------------------|--|---|----------------------------|--------|-------|--|----------------------------|--------|-------|---|
| <b>(1) Risk identification</b>        |  |   | <b>(2) Risk assessment</b> |        |       |  | <b>(3) Risk management</b> |        |       |   |
| Hazard                                | Potential Consequences                                       | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)  | Residual                   |        |       | Further controls (use the risk hierarchy)   |
|                                       |  |   | Likelihood                 | Impact | Score |  | Likelihood                 | Impact | Score |   |
| 11. Unfamiliarity with site/building. | Lost within building. Locked out and unable to regain entry. | Event attendees. Staff. General public.   | 4                          | 2      | 4     | Attendees briefed on building layout. Attendees given contact details for staff to regain entry/request an escort if required. Access restricted to areas of site in-scope of event. | 1                          | 2      | 2     | N/A   |
| 12. Robot collision.                  | Minor injury if collision with person. Property damage.      | Event attendees. Staff. General public.   | 3                          | 2      | 6     | Motors to be used initially at low power setting to determine safe value. Persons briefed on likely potential for moving robots.   | 2                          | 2      | 4     | N/A   |
| 13. Manual tools.                     | Minor injury, cuts, abrasions.                               | User of tools. People in the vicinity.  | 3                          | 4      | 12    | Hands to be kept above cutting edge and workpiece. Adequate space to be given to those with tools. Care to be taken with tools.  | 2                          | 4      | 8     | 8) Designated tool supervisor to monitor use of manual tools and advice people on safe working practices. |

| <b>PART A</b>                              |  |   |                            |        |       |   |                            |        |       |   |
|--|--|---|----------------------------|--------|-------|---|----------------------------|--------|-------|---|
| <b>(1) Risk identification</b>             |  |   | <b>(2) Risk assessment</b> |        |       |   | <b>(3) Risk management</b> |        |       |   |
| Hazard                                     | Potential Consequences   | Who might be harmed<br><br>(user; those nearby; those in the vicinity; members of the public) | Inherent                   |        |       | Control measures (use the risk hierarchy)   | Residual                   |        |       | Further controls (use the risk hierarchy) |
|  |  |   | Likelihood                 | Impact | Score |   | Likelihood                 | Impact | Score |   |
| 14. Batteries.                             | Smoke inhalation. Fire if battery damaged. Minor injury. Death.            | People in the vicinity.   | 2                          | 5      | 10    | All participants to be briefed on battery safety. Regulations require that batteries safely attached to robots. When not in use, batteries stored in LiPo-Safe bags provided by organisers. | 1                          | 4      | 4     | N/A                                       |
| 15. Robots (sharp edges and moving parts). | Minor injury including laceration, abrasion, bruises, crushing, splinters. | People in the vicinity of robots.   | 4                          | 2      | 8     | Sharp edges on handling points to be taped over/filed/sanded down. Robots not to be handled by corners of aluminium extrusion. User awareness of hazard and consequence.                    | 2                          | 2      | 4     | N/A                                       |

**PART B - Action Plan**

**Risk Assessment Action Plan**

# University of Southampton Health & Safety Risk Assessment

Version: 2.3/2017

| Part no.                             | Action to be taken, incl. Cost  | By whom              | Target date | Review date                      | Outcome at review date              |
|--------------------------------------|---|----------------------|-------------|----------------------------------|-------------------------------------|
| 1                                    | Fire briefing to be given.  | George Peppard       | 4/5         | 4/5                              |                                     |
| 2                                    | Register of attendees to be taken.  | Reception assistant. | 4/5         | 4/5                              |                                     |
| 3                                    | Manual handling briefing to be given.   | George Peppard       | 4/5         | 4/5                              |                                     |
| 4                                    | Inspect event space for hazards.  | name                 | 3/5         | 4/5                              |                                     |
| 5                                    | Draw up patrol and rota.  | name                 | 3/5         | 3/5                              |                                     |
| 6                                    | Participants with severe allergens to be identified in advance and separate catering provision to be made in a separate area. | name                 | date        | date                             |                                     |
| 7                                    | Electrical appliances to be tested before use by event staff.   | name                 | date        | date                             |                                     |
| 8                                    | Designated tool supervisor to monitor use of manual tools and advice people on safe working practices.                        | name                 | date        | date                             |                                     |
| Responsible manager's signature:     |   |                      |             | Responsible manager's signature: |                                     |
| Print name:<br><i>George Peppard</i> |   |                      |             | Date:                            | Print name:<br><i>Alex Colville</i> |
|                                      |   |                      |             |                                  | Date                                |



## Assessment Guidance

|                        |   |  |  |
|------------------------|---|--|--|
| 1. Eliminate           | Remove the hazard wherever possible which negates the need for further controls | If this is not possible then explain why       |  |
| 2. Substitute          | Replace the hazard with one less hazardous                                      | If not possible then explain why               |  |
| 3. Physical controls   | Examples: enclosure, fume cupboard, glove box                                   | Likely to still require admin controls as well |  |
| 4. Admin controls      | Examples: training, supervision, signage  |  |  |
| 5. Personal protection | Examples: respirators, safety specs, gloves                                     | Last resort as it only protects the individual |  |

|            |   |        |    |    |    |    |
|------------|---|--------|----|----|----|----|
| LIKELIHOOD | 5 | 5      | 10 | 15 | 20 | 25 |
|            | 4 | 4      | 8  | 12 | 16 | 20 |
|            | 3 | 3      | 6  | 9  | 12 | 15 |
|            | 2 | 2      | 4  | 6  | 8  | 10 |
|            | 1 | 1      | 2  | 3  | 4  | 5  |
|            |   | 1      | 2  | 3  | 4  | 5  |
|            |   | IMPACT |    |    |    |    |

### Risk process

1. Identify the impact and likelihood using the tables above.
2. Identify the risk rating by multiplying the Impact by the likelihood using the coloured matrix.
3. If the risk is amber or red - identify control measures to reduce the risk to as low as is reasonably practicable.
4. If the residual risk is green, additional controls are not necessary.
5. If the residual risk is amber the activity can continue but you must identify and implement further controls to reduce the risk to as low as reasonably practicable.
6. If the residual risk is red do not continue with the activity until additional controls have been implemented and the risk is reduced.
7. Control measures should follow the risk hierarchy, where appropriate as per the pyramid above.
8. The cost of implementing control measures can be taken into account but should be proportional to the risk i.e. a control to reduce low risk may not need to be carried out if the cost is high but a control to manage high risk means that even at high cost the control would be necessary.

| Impact |                                | Health & Safety   |
|--------|--------------------------------|---|
| 1      | Trivial - insignificant        | Very minor injuries e.g. slight bruising  |
| 2      | Minor                          | Injuries or illness e.g. small cut or abrasion which require basic first aid treatment even in self-administered. |
| 3      | Moderate                       | Injuries or illness e.g. strain or sprain requiring first aid or medical support.                                 |
| 4      | Major                          | Injuries or illness e.g. broken bone requiring medical support >24 hours and time off work >4 weeks.              |
| 5      | Severe - extremely significant | Fatality or multiple serious injuries or illness requiring hospital admission or significant time off work.       |

| Likelihood |  |
|------------|--|
| 1          | Rare e.g. 1 in 100,000 chance or higher    |
| 2          | Unlikely e.g. 1 in 10,000 chance or higher |
| 3          | Possible e.g. 1 in 1,000 chance or higher  |
| 4          | Likely e.g. 1 in 100 chance or higher      |
| 5          | Very Likely e.g. 1 in 10 chance or higher  |