

CLAIMS

1. A method of controlling a mobile robot capable of carrying out an operation
5 within an environment, the method comprising:
 storing an environment map in a memory, the environment map
 including data to enable the robot to navigate the environment;
 further storing in the memory data corresponding to one or more hazard
 areas encountered by the mobile robot during previous operations; and
10 reducing a tilt threshold of the robot when the mobile robot is navigating
 within an area of the environment that corresponds to a previously
 encountered hazard area.
2. A method of controlling a mobile robot as claimed in claim 1, wherein the data
15 corresponding to one or more hazard areas is location data.
3. A method of controlling a mobile robot as claimed in claim 1 or claim 2, wherein
 the data corresponding to one or more hazard areas is stored as a layer on top
 of the environment map.
- 20 4. A method of controlling a mobile robot as claimed in any one of the preceding
 claims, wherein a hazard area is an area in which the mobile robot has
 experienced a hazard event.
- 25 5. A method of controlling a mobile robot as claimed in claim 4, wherein a hazard
 event comprises the mobile robot becoming stuck.
6. A method of controlling a mobile robot as claimed in claim 4, wherein a hazard
 event comprises the mobile robot experiencing an over-tilt threshold event.
- 30 7. A method of controlling a mobile robot as claimed in any one of the preceding
 claims, wherein the memory is on-board memory on the robot.

8. A method of controlling a mobile robot as claimed in any one of the preceding claims, wherein a hazard area is an area of predetermined size the centre of which is a location where a hazard was encountered.
- 5 9. A method of controlling a mobile robot as claimed in claim 8, wherein the area of predetermined size is a circle with a radius of between 0.1m and 0.5m.
- 10 10. A method of controlling a mobile robot as claimed in any one of the preceding claims, wherein the method further comprises updating the data corresponding to one or more hazard areas when a new hazard is encountered by the mobile robot during an operation.
- 15 11. A method of controlling a mobile robot as claimed in any one of the preceding claims, wherein the data corresponding to one or more hazard areas comprises a probability factor associated with each hazard area, and the method comprises reducing the probability factor for a particular hazard area when the mobile robot navigates through the particular hazard area without encountering a further hazard.
- 20 12. A method of controlling a mobile robot as claimed in claim 11, wherein the tilt threshold of the robot is only reduced when the mobile robot is navigating within an area of the environment that corresponds to a previously encountered hazard area having a probability factor above a predetermined threshold.
- 25 13. A method of controlling a mobile robot as claimed in any one of the preceding claims, wherein the method comprises measuring the tilt of the mobile robot while it carries out an operation in an environment using one or more of the list comprising a gyro, an IMU and an accelerometer.

14. A mobile robot capable of carrying out an operation within an environment, the mobile robot comprising:
- storage in memory for storing an environment map;
 - storage in memory for storing data corresponding to one or more hazard areas encountered by the mobile robot during previous operations;
 - a control system for controlling the mobile robot while carrying out an operation within the environment,
- wherein the control system is configured to use a first tilt threshold when controlling the mobile robot in a normal operation mode, and is configured to use a second tilt threshold when controlling the mobile robot in a cautious operation mode when the mobile robot is navigating within a hazard area.
15. A mobile robot as claimed in claim 14, wherein the second tilt threshold is less than the first tilt threshold.
16. A mobile robot as claimed in claim 14 or claim 15, wherein the data corresponding to hazard areas is stored as a layer on top of the environment map.
17. A mobile robot as claimed in any one of claims 14 to 16, wherein the control system is configured to update the data corresponding to hazard areas when a new hazard is encountered by the mobile robot as it carries out an operation in the environment.
18. A mobile robot as claimed in any one of claims 14 to 17, wherein the data corresponding to hazard areas comprises a probability factor associated with each hazard area, and the control system is configured to reduce the probability factor for a particular hazard area when the mobile robot navigates through the particular hazard area without encountering a further hazard.
19. A mobile robot as claimed in claim 18, wherein the control system is configured to only use the second tilt threshold when the mobile robot is navigating within an area of the environment that corresponds to a previously encountered hazard area having a probability factor above a predetermined threshold.

- 5 20. A mobile robot as claimed in any one of claims 14 to 19, wherein the mobile robot comprises one or more of a gyro, an IMU and an accelerometer to provide a tilt measurement corresponding to the current tilt of the robot to the control system.