Workshop Lecture 1

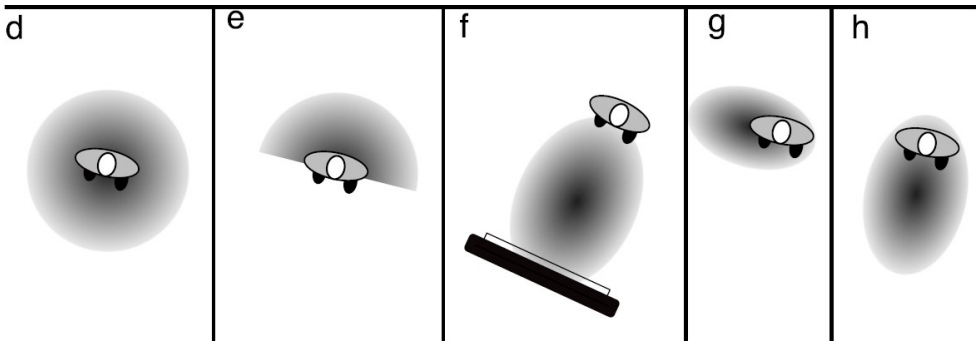
Part A: Gaussian visualisation script

In the Blackboard folder for this week, you will see the python script "`gaussian_viz.py`" under the workshop materials. Save locally, and run with (in terminal, `cd` to location of script, dependencies may need to be installed, python3 assumed):

```
python3 gaussian_viz.py
```

Part B: Basic modelling of social interaction constraints

Consider the following image from (fig 9, Kruse et al, 2013), and in particular section 3.4.1 (p1737). A number of scenarios are shown: consider how each of these could be achieved by simply manipulating one basic 2D Gaussian distribution.



When considering each of these scenarios (and others that you may choose, e.g. movements within a corridor), consider furthermore the following: what distances are suitable for these situations and why; what implications of the speed of the human are there; and what further environmental dependencies may there be? Further extensions may be explored using multiple gaussians.

Part C: Implications for costmaps used with ROS

To continue the theme from the topic this week, consider the way in which the costmap used for navigation is constructed (http://wiki.ros.org/costmap_2d). In particular, consider the way in which the social navigation layer is parameterised (http://wiki.ros.org/social_navigation_layers) and compare with your exploration in part B, above. If you are interested, you can explore the source code for this social navigation layer at the following (C++): http://docs.ros.org/kinetic/api/social_navigation_layers/html/annotated.html
To look at implementing a new costmap layer (termed a plugin) in ROS2 using the Nav2 stack, please consider the tutorial:
https://navigation.ros.org/plugin_tutorials/docs/writing_new_costmap2d_plugin.html