Project proposal

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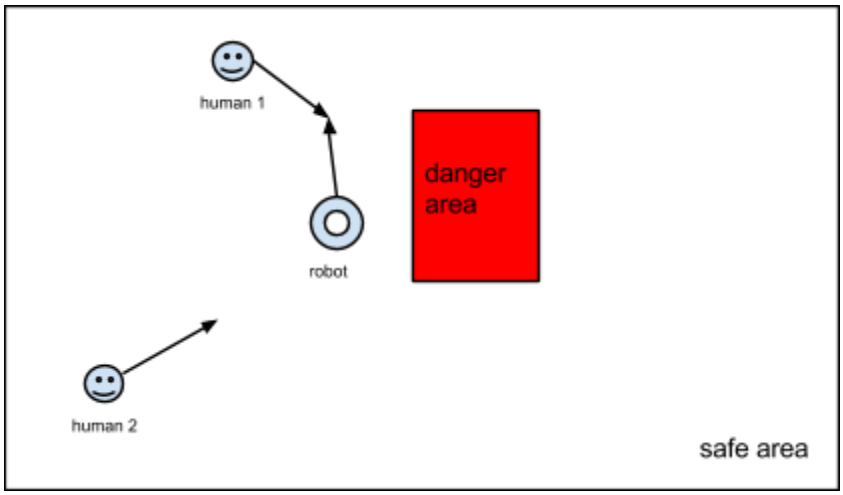
Use case for Asimov's laws



Should robots be allowed to decide who to let die and who to rescue? To visualize this ethical issue, we want to simulate Asimov's laws of robotics. The virtual two-dimensional environment possesses two areas, the safe area and the danger area, the latter has to be avoided. A robot is placed into this world with the assignment to avert any individual from entering the danger area, thus preventing an agent coming to harm. It does so by simply blocking the agent's path and therefore forcing him to change its direction and accordingly to evade the danger area.

The other (human) agents possess a starting point, a certain speed and a direction, which are all selected randomly. If they encounter the robot, they turn around, when colliding with other agents they wait until their path is clear again. Should the robot fail to intercept them in time and they reach the danger zone, they 'die'. However, if they are intercepted, or did not even need guidance and they reach the border of the field, they are saved. The challenge for the robot is to maximize the amount of saved lives. A situation may occur, where he has to let one human die, in order to save two others. It has to do an approximation of possible interceptions for all agents and decide on the best solution.

Task 3: Find the related (previous) works to your research proposal and/or tools

Unity (cross-platform game creation system)
http://unity3d.com/unity

Ethical robots save humans
http://www.youtube.com/watch?v=jCZDyqcxwlo

Imperial robots helping humans in the home, clinic and over land, sea and air
http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newssummary/news_10-6-2014-11-42-22

A Robot to Care for You in Old Age
http://money.usnews.com/money/blogs/on-retirement/2014/06/05/a-robot-to-care-for-you-in-old-age

Our friends electric
http://www.economist.com/news/technology-quarterly/21584455-robotics-new-breed-robots-being-designed-collaborate-humans

Helping Humans and Robots Work Together
http://www.wpi.edu/about/research-charlesrich.html

Task 4: Provide your rough plans in point form.

- Choose the programming language and the Integrated development environment (November 11th).
- Make research for useful tools, libraries and functions that could be useful for the project (November 18th).
- Code the AI of our agent (November 25th).
- Finish coding the project, AI, environment, actions, other agent, etc. (December 1st)
- Test the project and fix bugs (December 8th).