



LEARNING MATERIAL / ROBOTICS

PART 1
SOCIAL ROBOTS AND ETHICS

Target audience: high schools / secondary education institutions

The aim is to examine robotics from five different viewpoints:

1. Social Robots and Ethics
2. Social Robots and Feelings
3. Sensors, Actuators and Power Sources – Building a Robot
4. Robots and Programming
5. Robotics, Economics and Society

Teachers can utilize the learning material for different course contents and for developing an extensive know-how: thinking and learning to learn, cultural know-how, interaction and expression, multi-literacy, information and communication technology skills, working life skills and entrepreneurship, involvement and influence.

The learning material is based on the project of building and programming a social robot. It was supported by Futurice / The Chilicorn Fund, <https://spiceprogram.org/chilicorn-fund/>. The work group consisted of Olli Ohls, Maxim Slivinskiy, Paul Houghton, Teemu Turunen, Markus Paasovaara and Minja Axelsson.

Digitalents Helsinki acted as a partner in the project. The premise of the learning material is to share the knowledge obtained through the project. The robot named Futubot was 3D printed according to the openly licenced model of the French designer and visual artist Gael Langevin.
<http://inmoov.fr>

The material and the related content is downloadable for free from:

<https://spiceprogram.org>

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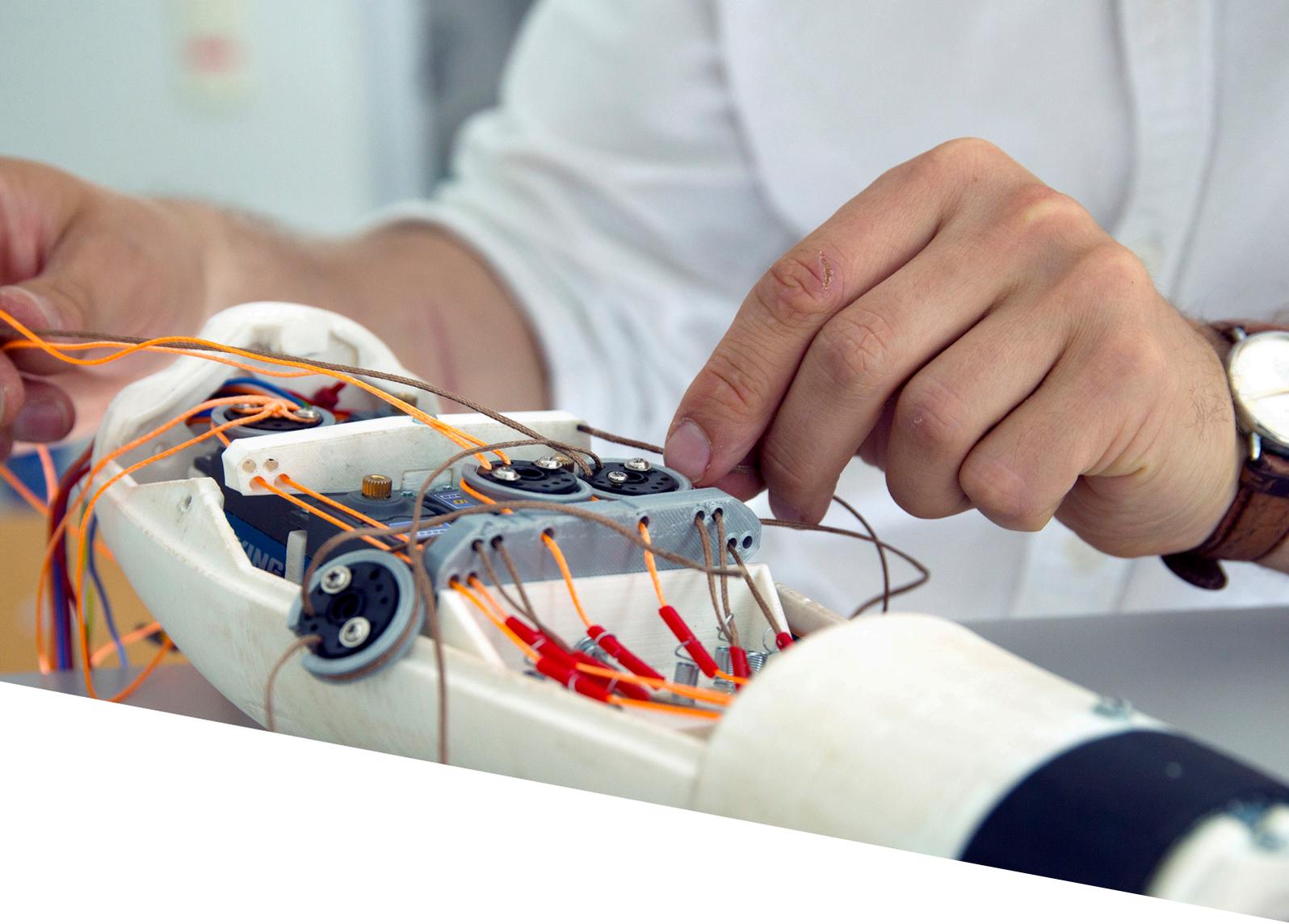
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PART 1

SOCIAL ROBOTS AND ETHICS



Background

Social robots are suitable for helping people in different areas, for example nursing and teaching. Robots can receive and transmit information and they have been programmed specifically to perform different services by recognizing and acting accordingly to different interactive situations. Social robots don't need to look human, but it can be useful: humans sense familiar features thus making the interaction more effective.

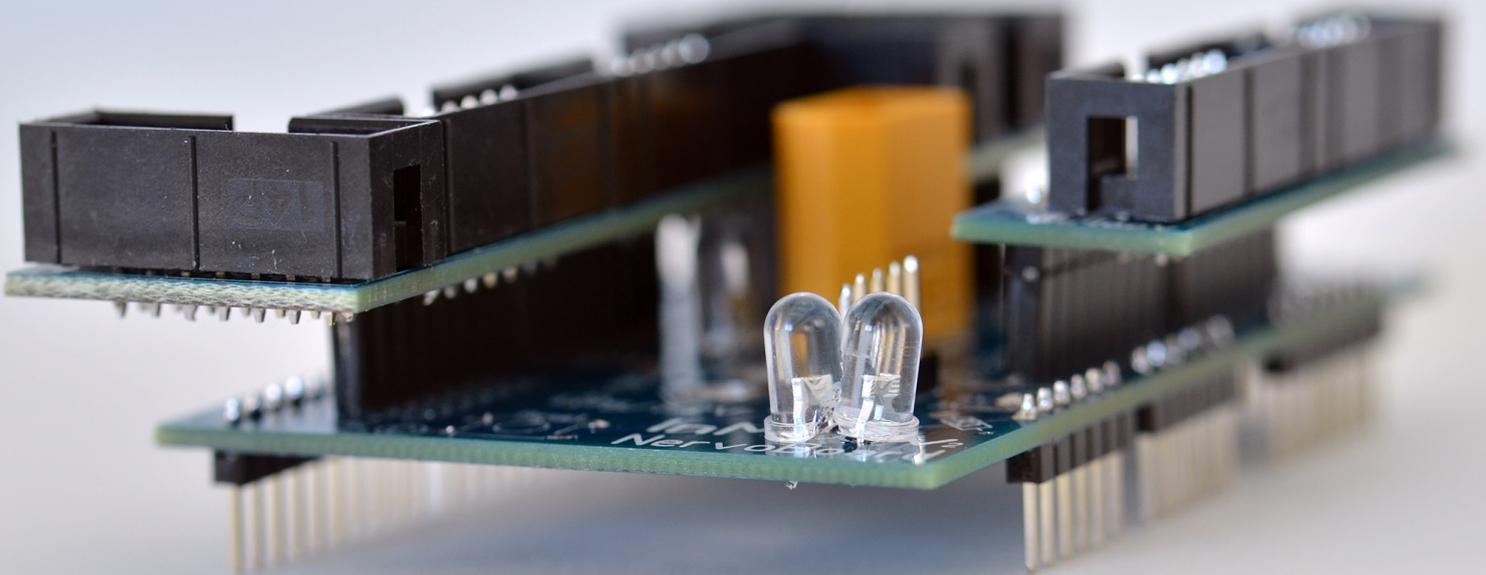
Ethics is a field that studies moral, i.e. what is good and bad, right and wrong. Robots are associated with various ethical questions; there are situations where a self-driving car has to act according to its programming logic. A machine doesn't make choices based on ethics but on programmed procedures. Car manufacturers are bound to take into consideration how driverless cars should act in life threatening situations. An ethical robot is one that can act in a morally acceptable way.

Experience

The goal in Futurice's InMoov-project is to develop a social robot to interact with children and the elderly. The model for the robot was chosen because it resembles a human. It can gesture like a person and includes technical features typical to a social robot like a camera and a microphone. In an ideal situation the robot can recognize and follow a person with its gaze using the camera. The robot can – using computer vision – recognize a person in a video feed and turn to face her/him. One wish that emerged through the project was that the robot can recognize different people from the video so that it could interact in a more personified manner, perhaps remembering some person specific information from previous discussions.

Lévinas' Ethics

According to the ethics of the French philosopher Emmanuel Lévinas, a person's moral obligations are formed in the moment of seeing another person's face. The philosopher thinks ethical responsibilities arise from another human. What if half the characters we meet were robots? How would our moral world change and what would happen to Lévinas' moral obligations when a person sees a robot – and vice versa?



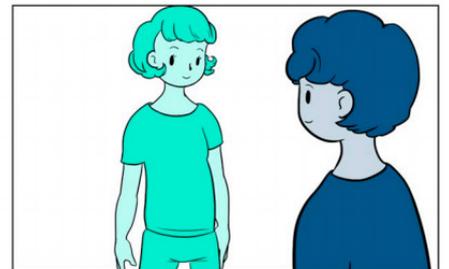
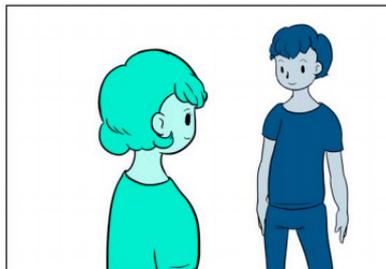
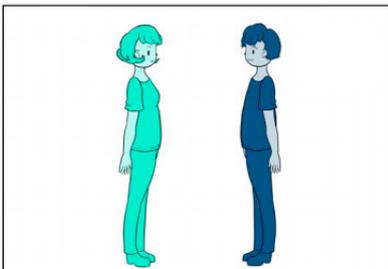
Assignment

The following assignments are meant as a base for a debate. Every group has to consist of at least 4 members. Participants can act as a robotics expert. Two members of the group act as camera operators.

- A. Considers robots as a threat to humankind.
- B. Considers robots as an opportunity to humankind.

- Find information from different sources to back your position. Justify your claim.

The debate is recorded with two or three cameras. The camera operators shoot based on the following examples. Any free software can be used for editing.



While recording and editing the video it is advised to consider how different image sizes affect the viewer's focus. The filming is best done in a space where only the group's own members speak, otherwise the audio can turn out unclear. After the editing the discussion can be continued by watching the video together with the group.



1/ Existing software algorithms can estimate people's skill sets efficiently based on their CV. Think in groups about the good and the bad aspects that could arise if a robot would decide who is hired in the future?

2/ Future work life robots are meant to help humans by increasing the superproductivity of workers. Superproductivity means growth in work productivity when humans and robots work together. A human guides the robot which performs mechanical tasks like transportation and statistical work. According to the thinking model $1+1$ is more than two meaning the productivity of work would be more than the sum of its individual parts. On what fields would superproductivity be possible and what kind of value discrepancies would it create?

3/ Let's imagine that robots develop humanlike movement, robust conversational skills and are tireless. Changes in the population structure will require a lot of workers in the care industry in Finland. What would you think if a robot, instead of a human, would take care of an elder? What about a child? Are there some tasks that a robot should definitely not do?

4/ Sophia is a social humanoid robot that received citizenship in Saudi Arabia. Citizenship entails rights and obligations. Can robots have rights? For somebody to have rights, somebody else has to guarantee them. If a robot ends up in a situation where its actions cause harm to a human, who would be responsible? Think and justify.

5/ Many robots like Sophia are programmed to behave in a human like manner to create an illusion that they are conscious and have a mind of their own. Do you think it is ethically ok to make people believe Sophia is conscious and self-aware? Justify.

Sources

30.10.2017 / EVA Report 2/2016

Robotit töihin

Koneet tulivat – mitä tapahtuu työpaikoilla?

<http://www.eva.fi/wp-content/uploads/2016/09/Robotit-töihin.pdf>

31.10.2017 / <http://moralmachine.mit.edu>

31.10.2017 More information about facial recognition in the OpenCv -programming library:

<https://pythonprogramming.net/haar-cascade-face-eye-detection-python-opencv-tutorial/>

<https://realpython.com/blog/python/face-recognition-with-python/>

<https://www.pyimagesearch.com/2016/06/20/detecting-cats-in-images-with-opencv/>

16.11.2017 <https://plato.stanford.edu/entries/levinas/>

8.11.2017: Interview with the Sophia robot: <https://www.youtube.com/watch?v=S5t6K9iwcdw>

Interviews:

23.10.2017 Michael Laakasuo, postdoctoral researcher, cognitive science / University of Helsinki

2.11.2017 Akseli Huhtanen, Head of Program / Dare to Learn

