QUICKSCAN - CANVAS

Self balancing robot

NAME: Self balancing robot

DATE: September 4, 2024 9:00 PM

DESCRIPTION OF TECHNOLOGY

It's a technology to balance two robots individually and cooperatively move and thus dance with eachother. The robots communicate via WiFi and are controlled by one main computer

HUMAN VALUES

TRANSPARENCY

Yes, through a plan of approach, weekly tutor meetings and two reports, all decisions and technology details are thoroughly explained.

IMPACT ON SOCIETY

The project doesn't pose a problem; rather, it serves as a challenging opportunity for Advanced Motion Control students. Its fundamental purpose is to facilitate the practical application of the material learned in class, bridging the gap between theoretical knowledge and real-world practice. This hands-on experience aligns classroom teachings with the practical aspects of the subjects studied in school, fostering a deeper understanding and skill development among students.

STAKEHOLDERS

SUSTAINABILITY

The robots are powered with a battery charged by the electrical grid. The electrical grid in the Netherlands consists of 63% of fossil, 33% of renewable and 4 % of nuclear power. The battary is powered by a lithium ion battery which has a round trip efficiency of 78%. Since this project is low powered compared to other mechatronics projects and the round trip efficiancy is quite good this isn't a polluting technology. [source CBS]

HATEFUL AND CRIMINAL ACTORS

DATA

The whole purpose of this project is to understand the control technology behind a balancing inverted pendulum. Control engineering is about having an input signal, disturbances and an output signal. By means of a controller you are able to change the input DATA to a signal that is in accordance with the requirements. The input data from the sensors, mathematical theories and hardware guides are the only data inputs that are used in this project. Reports from former groups are handled carefully because we are not sure that…

FUTURE

PRIVACY

INCLUSIVITY

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QUICKSCAN - CANVAS - HELPSIDE

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HUMAN VALUES

How is the identity of the (intended) users affected by the technology?

To help you answer this question think about sub questions like:

- If two friends use your product, how could it enhance or detract from their relationship?
- Does your product create new ways for people to interact?…

TRANSPARENCY

Is it explained to the users/stakeholders how the technology works and how the business model works?

- Is it easy for users to find out how the technology works?
- Can a user understand or find out why your technology behaves in a certain way?
- Are the goals explained?
- Is the idea of the technology explained?
- Is the technology company transparent about the way their…

IMPACT ON SOCIETY

What is exactly the problem? Is it really a problem? Are you sure?

Can you exactly define what the challenge is? What problem (what 'pain') does this technology want to solve? Can you make a clear definition of the problem? What 'pain' does this technology want to ease? Whose pain? Is it really a problem? For who? Will solving the problem make the world better? Are you sure? The problem definition will help you to determine…

STAKEHOLDERS

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by…

When thinking about the stakeholders, the most obvious one are of course the intended users, so start there. Next, list the stakeholders that are directly affected. Listing the users and directly affected stakeholders also gives an impression of the intended context of the technology.
…

SUSTAINABILITY

In what way is the direct and indirect energy use of this technology taken into account?

One of the most prominent impacts on sustainability is energy efficiency. Consider what service you want this technology to provide and how this could be achieved with a minimal use of energy. Are improvements possible?

HATEFUL AND CRIMINAL ACTORS

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

Can you imagine ways that the technology can or will be used to break the law? Think about invading someone's privacy. Spying. Hurting people. Harassment. Steal things. Fraud/ identity theft and so on. Or will people use the technology to avoid facing the consequences of breaking the law (using trackers to evade speed radars or using bitcoins to launder…

DATA

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into…

There are fundamental issues with data. For example:

- Data is always subjective;
- Data collections are never complete;
- Correlation and causation are tricky concepts;
- Data collections are often biased;…

FUTURE

What could possibly happen with this technology in the future?

Discuss this quickly and note your first thoughts here. Think about what happens when 100 million people use your product. How could communities, habits and norms change?

PRIVACY

Does the technology register personal data? If yes, what personal data?

If this technology registers personal data you have to be aware of privacy legislation and the concept of privacy. Think hard about this question. Remember: personal data can be interpreted in a broad way. Maybe this technology does not collect personal data, but can be used to assemble personal data. If the technology collects special personal data (like…

INCLUSIVITY

Does this technology have a built-in bias?

Do a brainstorm. Can you find a built-in bias in this technology? Maybe because of the way the data was collected, either by personal bias, historical bias, political bias or a lack of diversity in the people responsible for the design of the technology? How do you know this is not the case? Be critical. Be aware of your own biases.…

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