QUICKSCAN - CANVAS

AI model predicting intention out of bed

NAME: AI model predicting intention out of bed
DATE: January 30, 2025 5:30 PM
DESCRIPTION OF TECHNOLOGY
Intention out of bed prediction with AI

HUMAN VALUES

Residents will be positively impacted by the system, as it reduces unnecessary check-ins while ensuring timely interventions when they show an intention to get out of bed. This helps maintain their privacy and dignity while balancing caregiver efficiency with resident safety. Predictions are currently informed by expert input and literature, with efforts focused on minimizing false alerts that could disrupt residents unnecessarily.

TRANSPARENCY

The concept of predicting intentions to get out of bed is straightforward to explain, but the underlying technology is complex and requires context to fully understand. To build trust, caregivers and stakeholders will be provided with clear explanations of how the system generates predictions and how it should be used in care settings. While details about the integration with Momo Medicals BedSense system remain out of scope, general transparency about the technologys functionality will be prioritized.

IMPACT ON SOCIETY

Currently, in nursing home care, elderly residents are at risk of experiencing bed falls when trying to get out of bed unassisted or developing decubitus from lying down for too long when help is delayed. The primary goal of this project is to notify caregivers earlier by predicting with AI when residents show an intention to get out of bed, enabling timely assistance. This can help reduce the risks of falls and the chance of developing decubitus caused by prolonged immobility.

STAKEHOLDERS

- Momo Medical
- Avoord
- tanteLouise
- Q Care

SUSTAINABILITY

It processes a lot of energy depending on what you would like to do, currently there is a lot of plotting, exporting and feature engineering which uses power. AI predictions will be done of the latest version of the exported data, there is a lot of energy usage. The goal is to plot/view whenever needed. To export the data in order to transform it by creating new data features and to predict when necessary based on new information and data. Take the necessary actions when needed, as the concept has options to different things.

HATEFUL AND CRIMINAL ACTORS

Currently, we're using raw sensor data to predict with AI models. Currently, it does not seem that the technology can be used to break laws are the sensor data we received is partially hashed to cover up the resident's name/id. The hashing is not done by us.

DATA

Yes, the dataset currently only consists of 3 days of sensor data from residents, which makes it difficult to detect consistent patterns for intentions to get out of bed. Most data points show residents in bed, and there is not enough information about when they intend to move or health conditions that might influence this. These limitations are taken into account by working with expert input and focusing on improving data collection in the future.

FUTURE

In the future, the system could significantly impact caregiving by shifting from reactive check-ins to proactive interventions. By detecting intentions to get out of bed in real-time, caregivers can focus their attention where it is most needed, reducing fall risks and improving overall safety. As the system evolves, it will also aim to predict risks like decubitus development, enabling more comprehensive resident care.

PRIVACY

Raw sensor data and type of mattress currently.

INCLUSIVITY

The system is focused on detecting when a resident is in bed and identifying intentions to get out of bed. Since it uses a limited dataset, there is a built-in bias that assumes generalized behaviour across different residents and mattress types. These biases will be reduced by collecting more data and refining the system with input from caregivers and experts.

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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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