Mini-FLUFFY Docking Station Position Recognition System

A smart docking recognition system developed as part of the Mini-FLUFFY project.
It enables automated connection between mobile units and workstations through sensors and a control platform.
The goal is to improve accuracy, reduce human error, and make the process more efficient.
The system also serves as an educational tool to study automation, data

exchange, and responsible technology use.

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Context of use: Education
Level of education: Bachelor

Impact on society

What impact is expected from your technology?

This category is only partial filled.

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

Manual docking and validation between mobile units and stations often cause misalignment, delays, and errors in automated processes. This system solves the problem by enabling automatic recognition and positioning, improving safety and efficiency. It also helps students understand the challenges of human-machine coordination in smart manufacturing environments. The problem is real in both education and industry, where accuracy and reliability are critical.

Are you sure that this technology is solving the RIGHT problem?

This question has not been answered yet.

How is this technology going to solve the problem?

This question has not been answered yet.

What negative effects do you expect from this technology?

This question has not been answered yet.

In what way is this technology contributing to a world you want to live in?

This question has not been answered yet.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

This question has not been answered yet.

Hateful and criminal actors

What can bad actors do with your technology?

This category is only partial filled.

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

The system itself is not designed for misuse, but if adapted, it could be used to track or identify movements without consent.
For example, sensors or data logs could be misapplied to monitor users or restrict access.
Proper data governance and clear user permissions are required to avoid unethical surveillance or discrimination.

Can fakers, thieves or scammers abuse the technology?

This question has not been answered yet.

Can the technology be used against certain (ethnic) groups or (social) classes?

This question has not been answered yet.

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.

This question has not been answered yet.

How could bad actors use this technology to subvert or attack the truth?

This question has not been answered yet.

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Privacy

Are you considering the privacy & personal data of the users of your technology?

This category is only partial filled.

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

The system does not store or process personal data.
It only handles technical identifiers such as docking status, station ID, and timestamps.
All data is operational and anonymized, used exclusively for testing, monitoring, or educational purposes.
If user access is ever added, it should follow data-protection regulations and apply minimal data collection principles.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

This question has not been answered yet.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

This question has not been answered yet.

Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.

This question has not been answered yet.

In which way can you imagine a future impact of the collection of personal data?

This question has not been answered yet.

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

This question has not been answered yet.

Human values

How does the technology affect your human values?

This category is only partial filled.

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

The technology strengthens users sense of responsibility and awareness about automation.
Students and operators gain confidence in handling real industrial processes and data ethically.
It promotes collaboration, technical competence, and sustainable thinking.
Rather than replacing human roles, it empowers users to make informed decisions supported by technology.

How does the technology influence the users' autonomy?

This question has not been answered yet.

What is the effect of the technology on the health and/or well-being of users?

This question has not been answered yet.

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.

This question has not been answered yet.

Stakeholders

Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder
Engineering students

How is this stakeholder affected?
-

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

Name of the stakeholder
Teachers and instructors

How is this stakeholder affected?
-

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

Name of the stakeholder
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How is this stakeholder affected?
-

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?

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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.

This question has not been answered yet.

Data

Is data in your technology properly used?

This category is only partial filled.

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?

Yes, data limitations are acknowledged.
The system relies on sensor readings and logs that may contain noise or incomplete information.
To reduce error, calibration and validation steps are integrated in testing.
Data is interpreted only for operational and educational purposes, not for personal evaluation.
Users are encouraged to question data accuracy and understand its context.

How does the technology organize continuous improvement when it comes to the use of data?

This question has not been answered yet.

How will the technology keep the insights that it identifies with data sustainable over time?

This question has not been answered yet.

In what way do you consider the fact that data is collected from the users?

This question has not been answered yet.

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Inclusivity

Is your technology fair for everyone?

This category is only partial filled.

Will everyone have access to the technology?

This question has not been answered yet.

Does this technology have a built-in bias?

The technology itself does not intentionally include bias, but the setup could reflect human or environmental assumptions.
For example, testing conditions might favor certain hardware layouts or lighting environments.
By documenting calibration steps and involving diverse users, potential bias is minimized.
Training sessions also help users detect and correct unintentional bias in operation.

Does this technology make automatic decisions and how do you account for them?

This question has not been answered yet.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?

This question has not been answered yet.

Does the team that creates the technology represent the diversity of our society?

This question has not been answered yet.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Transparency

Are you transparent about how your technology works?

This category is only partial filled.

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

Yes, the system is designed to be transparent and educational.
All users can access documentation, wiring diagrams, and logic explanations.
The interface clearly shows how data flows and what each component does.
There is no commercial business model; transparency is part of the learning goal.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?

This question has not been answered yet.

Is it possible to file a complaint or ask questions/get answers about this technology?

This question has not been answered yet.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?

This question has not been answered yet.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Sustainability

Is your technology environmentally sustainable?

This category is only partial filled.

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

Energy efficiency is promoted through modular hardware and controlled power usage.
Devices are activated only when necessary, reducing idle consumption.
Components can be reused in other experiments to extend their lifespan.
Future iterations may include monitoring energy per cycle and automatic standby modes.

Do you think alternative materials could have been considered in the technology?

This question has not been answered yet.

Do you think the lifespan of the technology is realistic?

This question has not been answered yet.

What is the hidden impact of the technology in the whole chain?

This question has not been answered yet.

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.

This question has not been answered yet.

Future

Did you consider future impact?

This category is only partial filled.

What could possibly happen with this technology in the future?

The concept could evolve into a fully autonomous smart factory demonstrator.
It may integrate AI for predictive maintenance and adaptive scheduling.
In education, it can inspire sustainable design thinking and digital manufacturing skills.
If scaled, similar systems could connect universities and industry through remote labs.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

This question has not been answered yet.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

This question has not been answered yet.

Would you like to live in one of this scenario's? Why? Why not?

This question has not been answered yet.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

This question has not been answered yet.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

This question has not been answered yet.