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Hospital Waste Management – A vision-based approach

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1. Introduction

Novel legislations from EU require better handling of waste produced. Meanwhile the volume of waste produced in European countries is on the rise. A high volume of waste is generated in hospitals, which will be the focus of the project.

4. Economic Feasibility

To evaluate the **economic potential** of the plastic waste produced at Hjørring hospital per container, a **feasibility space** was created, ranging from best to worst cases, The analysis was based on findings at Hjørring hospital, desktop research and interviews with waste management companies.



2. Project Scope

The scope of the project is on plastic waste produced in hospitals and focuses on sorting plastic into 7 fractions in order to make sorting an economically viable option...



(low density)

Polyvinyl

chloride

Polyethylene Polypropylene

Based on the feasibility space, an NPV analysis was performed. Suggesting the economic validity Of sorting plastic.

Time

Year 1

Year 2

Year 3

Year 4

Year 5

Bisphenol A

and others



27224.9 USD

44799.9 USD

17575 62374.9 USD

17575

17575

3. Computer Vision

Acknowledgement

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Polyethylene

(high density

Polyethylene

terephthalate

Polystyrene

The waste was categorized into 7 categories using a **Yolov8** network so that it could be properly sorted at the waste producing facilities.



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5. Product Architecture

NPV

-12318.85

15977.27273

14524.79339

13204.35763

12003.96148

43391.53522

A product architecture was created to make it possible to implement the project in different **phases of implementation** and to employ **modularity**. Implementing the product with the use of a general product architecture also enabled **seamless adoption of novel** technologies, like new neural architectures or better sensor technologies without changing the entire product, enforcing adaptability.

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Container

6. Conclusion

The results demonstrate the economic feasibility in the current market of plastic given that high enough amounts are produced ~62.000 USD saved, compared to spending ~88.000 USD via normal disposal methods, over a 5-year period. It verifies that plastic can be sorted using CV and gives the user the possibility to implement the product In stages of implementation.

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