# SNOOP.PY / Quality control filter

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***Abstract*-** Quality control (QC) is a process through which businesses seek to ensure that product quality is maintained or improved. Quality control requires the company to create an environment where management and employees strive for perfection. It also helps with the perception of a product or a company in the eyes of its consumers, as it helps build a reputation for the brand of Quality and Reliability of Products.

Quality control has traditionally been done manually, using various methods; such as visually verifying, weighing the product, testing the product etc. This requires a large number of people to keep up with the process if demand is high. Scaling production while keeping costs down and ensuring quality becomes arduous and complicated. With Snoop.py, we aim to automate some of this process, bypassing the drawbacks of the manual method of Quality Control prevalent in the Industry.

***Index Terms***- Quality Control, OpenCV, SVM, Machine Learning.

1. **Introduction**

Quality control is a critical aspect of any industry that deals with physical products. The manual inspection process is time-consuming and prone to human error, which can result in incorrect product classification. The Snoop.py project addresses this issue by automating the segregation process using OpenCV and machine learning. The system is designed to accurately distinguish between defective and usable products, reducing the time and resources required for manual inspection. The user-friendly interface and efficient performance of Snoop.py make it an ideal solution for quality control in a wide range of industries. In this paper, we will provide a comprehensive overview of the project, including the technology used, system architecture, and user guide.

Snoop.py utilizes the latest advancements in computer vision and machine learning to provide a highly effective solution for product segregation. OpenCV, a powerful computer vision library, is used to capture and analyze images of products, while machine learning algorithms are employed to classify the products as either defective or usable.

The system is designed to be flexible and can be easily configured to meet the specific requirements of different industries. Additionally, the user-friendly interface and intuitive design make it simple and straightforward for operators to use, even without prior technical expertise.

With the Snoop.py project, industries can significantly improve the accuracy and efficiency of their quality control processes, reducing the risk of incorrect product classification and increasing overall productivity. This paper provides a comprehensive overview of the Snoop.py project, including the technical details, user guide, and troubleshooting tips, making it an invaluable resource for anyone interested in implementing a cutting-edge solution for product segregation.

1. **Study of similar projects or technology\ literature review**
2. **Basic concepts/ Technology used**

Python is a high-level, interpreted programming language that is widely used for various applications, including scientific computing, data analysis, and web development. Python 3 is the latest version of the Python programming language, released in 2008. It has a vast and active community, which has developed a large number of libraries and packages for various purposes. This makes it easy to use existing libraries and modules to build new applications. It also has a simple and easy-to-read syntax. Despite its simple syntax, It is a high-performance language, thanks to its efficient memory management, built-in support for concurrency, and optimized libraries. This makes it an ideal choice for building complex applications that need to perform well. Python 3 was used for this project due to its large library support, ease of use, and high performance, making it an ideal choice for building a computer vision and machine learning-based solution for product segregation.

Artificial Intelligence (AI) is the simulation of human intelligence in machines that are designed to think and act like humans. It involves creating systems that can learn from experience, understand natural language, make decisions, and perform tasks.

Machine learning is a subfield of artificial intelligence that deals with the development of algorithms that can learn from data and make predictions or decisions based on that data. Machine learning algorithms are trained on large amounts of data and use statistical techniques to find patterns and relationships within that data. These algorithms can then be used to make predictions about new, unseen data, and can be improved over time as they are exposed to more data. It is used in a wide range of applications, including image recognition, natural language processing, and recommendation systems.

OpenCV is an open-source computer vision library that provides a wide range of tools and algorithms for image and video processing. It supports many programming languages, including Python, and is widely used in industries such as robotics, automation, and security. It can be used for tasks such as object detection, face recognition, and image filtering, and is an essential tool for many computer vision applications.

Support Vector Machine (SVM) is a supervised learning algorithm used for classification and regression analysis. It finds an optimal boundary between classes by maximizing the margin between them, using a mathematical concept known as a hyperplane. SVM can handle both linear and non-linear data, making it a versatile and powerful tool for machine learning.

1. **PROJECT COMPONENTS**

Describe about various components including its technical specifications used in the project. Highlights the reasons of its use.

1. **Proposed Model / Architecture / Methodology/ Model Tool**

This is the most crucial step for the project. In this section, describe about the project’s model or tool and it’s working with some figures (Block diagram or Ckt diagrams). Theoretically explain the working of the project with a diagram (if suitable).

1. **Implementation and results**

In this section, describe how the project is developed and implemented. Mention about the case studies done using the proposed technique and findings of the case studies. (**Working model and operation**)

1. **PERFOMANCE ANALYSIS**

Weight Budget Analysis, Cost Analysis and the Final Device

1. **SOCIETAL IMPACT AND FUTURE SCOPE**

Mention the Societal benefits & implications. The author may give some suggestions for future directions of their projects for the readers.

1. **CONCLUSION**

In conclusion section, the author has to present the processes, observations and findings of the project.

References

In this section, add all the references of your project work. In a project paper, this section is **very important**. while entering the references, **follow the uniform formatting** for all the references listed in this section. All references in this list **must be cited** in appropriate places inside the paper.

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Appendix A: Planning and Project Management

Appendix B: Summery of Project

Appendix C: Project Code (if any)