

# PharmaSee: An automated system for identification, separation and disposal of pharmaceutical medications

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## INTRODUCTION

Improper disposal of pharmaceuticals and healthcare supplies in households poses significant problems and puts the surrounding community and environment at risk. The major causes of this are low literacy regarding proper disposal methodologies, as well as low awareness regarding recent developments globally. For example, a 2019 study reported that only 42% of Danish citizens returned unused medical supplies to pharmacies or municipalities. There are many environmental issues and health problems caused by improper disposal of medical supplies.

## SOLUTION

Our device aims to solve the problem on a household or local scale. It identifies and categorizes unused medicine for proper disposal. It also tracks and alerts one to the expiry dates of bought medicines. Further, we are working on implementing an interactive system that could answer basic queries about disposal or donation methods, as well as notify municipalities regarding collection of such medications.



Figure 1: Phases of operation of the device

## IMPLEMENTATION

Our device has an image classification network that identifies the type of medication using a camera. Once identified, the device accepts inputs from the user – the date of opening and expiry and alerts are sent to the user accordingly. Further, the device consists of various compartments suited for storing different types of unused/expired medicines in appropriate conditions. The medication is kept here temporarily, and notifications are sent to the municipal authorities at appropriate times for collection of relevant pharmaceuticals.

## ON-GOING DEVELOPMENT

We are working on creating an integrated chat meant to answer queries that the user might have regarding disposal or donation. We are also focused on enhancing the interior of the storage compartments by creating environments suited to the storage of the unused/expired medicines.