



# Object Recognition for Medical Devices

Project Management and Software Development  
for Medical Applications

## General Info

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## Project Abstract

Hospitals collaborate with multiple medical device manufacturers. From the operating room to radiology, different vendors provide tools and equipment for the medical staff to conduct their work with. MDOP aims to provide a universal solution that connects all devices to their users in an easy manner. One of the most valuable features of MDOP is medical device recognition and detection.

## Background and Motivation

Considering the multitude of medical devices and device manufacturers, hospitals are still facing a problem when it comes to providing their staff direct access and quick accessibility to device information.

With MDOP, information such as training materials, quick guides or videos can be accessed by just scanning the QR/Matrix code of the device. However, sometimes, these devices might have warn-off codes (not scannable), or the code might be in the back of the device and the MDOP user cannot perform the scan. This is where Object Recognition and Detection can play a crucial role for helping the user scan the device and access its information by just taking a picture of the device.

## Student's Tasks Description

The student should develop an Object Recognition Program that allows the user to submit a photo of a device and the system would respond with the type of device it has detected.

## Technical Prerequisites

Programming skills are very important since the student is supposed to build a program that allows for the user to input an image and receive feedback on what kind of device the system detected in the picture.

Understanding of Deep Learning/Machine Learning or Computer Vision is desired. UX/UI skills are also valuable.

German language is preferred since the student will have to stay in contact with Klinikum Rechts der Isar for gathering device pictures (for preliminary model training). Thus, communication with nurses (in German) might be needed.

## References

<https://machinelearningmastery.com/object-recognition-with-deep-learning/>

<https://ieeexplore.ieee.org/abstract/document/8627998>

Please send the completed proposal to [ardit.ramadani@tum.de](mailto:ardit.ramadani@tum.de), [lennart.bastian@tum.de](mailto:lennart.bastian@tum.de) and [tianyu.song@tum.de](mailto:tianyu.song@tum.de). Please note that this proposal will be evaluated by the BMC coordinators and will be assigned to a student only in case of acceptance.