

## Bachelor's/ Master's Thesis:

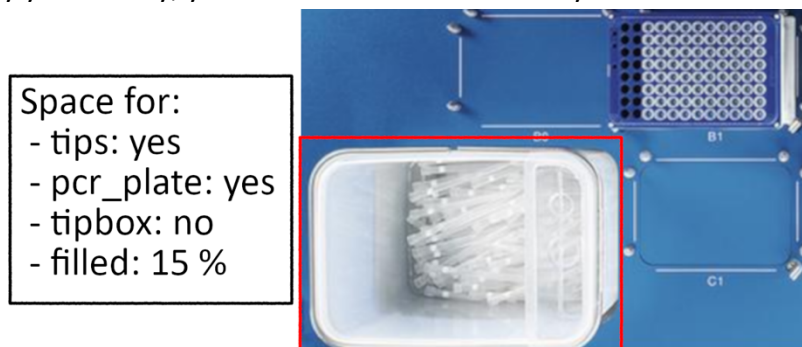
### Computer Vision Pipeline to prevent Waste Overflows in a Liquid Handling Robot (epMotion)

#### We are

a market leading life-science device manufacturer located in Hamburg – the Eppendorf Instrumente GmbH. We produce devices and solutions for cell, liquid and sample handling. In the growing field of laboratory automation, we develop a liquid handling robot – the epMotion 507x. With newer modules we can place more labware, especially t.i.p.s. boxes with pipette tips on our worktable. Since these tips are throw-away consumables, we have more waste to handle per run and tips tend to get stuck in each other in unpredictable ways.

#### We offer

thesis based challenges where you will find the most reasonable approach to prevent an overflow of the waste bin using machine learning, either as a classification or a regression task. The goal is to implement a computer vision pipeline that extracts and evaluates the ROI from the full camera frame. For the machine learning part, an annotation data structure as well as the tooling for it will be implemented by you. Finally, you will train and benchmark your machine learning algorithm.



#### We require

you to have programming skills with Python 3 and at least some experience with machine learning frameworks like Keras or SciKit-Learn. Experience with QML or JavaScript is preferred to extend the existing annotation tool.

Interest in machine learning, computer vision and statistics is essential for this task.

#### We provide

- > A working prototype with multiple cameras and an extendable computer vision pipeline with tools to record new data.
- > A special machine learning server with 52 real cores, 1TB RAM and 5x Tesla V100 GPUs.
- > Experience in supervising Bachelor's and Master's Thesis.

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