Mini Projects

The students are allowed to design, implement, and present a mini project instead of reading and presenting a paper. The students are encouraged to come up with their **own ideas**. The students are free to choose the infrastructure they want. However, we can only support them if they use either Matlab or OpenCV (C++ or Python). It follows a list of possible ideas.

Please contact Zichao Zhang <zhangzichao17 at gmail dot com> and Elias Mueggler <mueggler at ifi dot uzh dot ch> if you have questions about the proposed projects or want to propose an own idea.

Count fruits on a tree

In agriculture monitoring and automated agricalture, detecting and counting fruits (e.g., oranges) is an important building block. The goal is to detect and count a specific fruit on a tree that could be recognized by color, shape, etc.

Detect and identify playing cards

In this project, you detect and identify playing cards from images. This involves detecting basic shapes and template matching. The output of this program could serve as input to a robot that plays poker.

Read barcodes

The goal of this project is to find barcodes in images (e.g., on products) and identify the number they represent. This involves image filter, detection of specific shapes (bars), and interpretation of these bars.

Stitch panorama images

The goal of this project is to create panoramic images from a set of overlapping photographs. This involves finding correspondences between the images and warping them accordingly.

Identify the state of a game

In this project, the goal is to identify the state of a game (e.g., Rubik's Cube, Nine Men's Morris (German: Mühle), or Four Wins). This involves detecting the play field and its elements by shape, color, etc. Such a program could provide the input to a robot that plays games with humans.

Estimate the height of a building

In this project, you are required to estimate the height of the building by counting the number of stories. The height of each story is assumed to be known. This involves image filtering and interpretation.

Optical Character Recognition (OCR)

OCR is an essential module for digitalizing documents and office automation. The goal of this project is to identify individual characters in an image. This involves image filtering, segmentation and template matching.

Visual Odometry (VO)

VO is the process of estimating a camera's motion from the images only. The goal of this project is to implement a visual odometry pipeline. This involves finding image correspondences and motion estimation based on two-view geometry.