Abstract

In the field of robotics it is still somewhat of a challenge to analyse objects and scenes in camera images that are far away from the robot. This might not be problematic for many stationary and/or slow moving platforms, but it is easy so see what issues may arise when the speed increases or timing in general gets critical.

Combating this problem can be done by, for example, changing the lens of the camera, which in turn hurts the field of view (FOV).
Another approach would be to employ a higher resolution camera. The problem here is that more bandwidth, aswell as higher computing power would be needed to transport and process those images. So every advance into more depth clarity comes with it's own tradeoffs.

Therefor a solution with a smaller cost is needed. For this goal, the "higher resolution" approach may still be a viable option by using AI upscaling. The idea is to use a supersampling model to "enhance" certain regions of interest in the source image and analyse them further. For the sake of evaluation this further analysis will be performed as monocular depth estimation.