

Thanks to the rapid development of CCD detectors there is a method called "Lucky Imaging" being used in astronomy in the past years. Like adaptive optics, Lucky imaging makes it possible to gain pictures with resolution close to the diffraction limit, i.e. it gives to ground based telescopes the possibility to gain pictures with the resolution close to the resolution of telescopes placed outside the atmosphere. Lucky imaging is cheaper alternative to Adaptive Optics, with a lower demandingness on the presence of reference stars.

This Diploma thesis is an implementation of Lucky Imaging into a software system for robotics observatory control called "RTS2". Three algorithms for evaluation of image focus are studied and their performance is compared on digital images acquired by a telescope. In the second part of the thesis, two methods of image registration are studied, which are used to suppress noise on the acquired images.