Motivation
The performance of image processing software depends not only on the theoretical complexity of algorithms, but also on image properties, parameter settings of algorithms, implementation details, and hardware characteristics (incl. heterogeneous hardware options with CPUs, GPUs, cluster and cloud options). The state-of-the-art to measure this performance are experimental studies during the development of each individual image analysis pipeline. Such studies are time consuming, especially in case of huge images, different hardware options, and varying image properties.

Task
In this thesis, it is to be evaluated whether the existing software architecture performance simulator “Palladio” can be used to predict the performance impact of different image analysis pipeline stages. Therefore, the modeling language of Palladio (PCM) is used to model exemplary image analysis algorithms. Simulation results of such models are compared with measured data to evaluate the accuracy of the Palladio simulations to learn how to improve the PCM to better predict the performance of kernel implementations.

This thesis will be supervised at the Institute for Program Structures and Data Organization (IPD, Jun.-Prof. Koziolek), Department of Informatics, and at the Institute for Applied Computer Science (IAI, Prof. Mikut).

We provide
- Working with latest and innovative Technologies
- Close relation to current research project
- Very good working environment and intensive supervision

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