The objective of this project is to build a platform for autonomous, on-demand systems within video processing and other digital processing algorithms that require intensive computations and where mobile clients can save energy by off-loading computations to servers in the environment. Self-reconfiguration provides a necessary degree of flexibility for such systems.

FRAMEWORK FOR PARTIAL SELF-RECONFIGURATION

The idea is to use an FPGA based server as an on-demand hardware accelerator enabling runtime reconfigurable modules to run as tasks that are fetched, placed and scheduled in time. These modules are provided on-demand from either the client or the network.

VIDEO PROCESSING ALGORITHMS AS RECONFIGURABLE MODULES

The switching from Coding 1 to Coding 2 will be relevant and beneficial whenever the sum of transmission and decoding power on the mobile client becomes substantially smaller:

\[ P_{\text{Decode}}(\text{Coding 2}) + P_{\text{In}}(\text{Coding 2}) < P_{\text{Decode}}(\text{Coding 1}) + P_{\text{In}}(\text{Coding 1}) \]

CONCLUSION

The parts of the complex self-reconfigurable system have been implemented and tested. Intercommunication providing interrupt mechanism has been established. Further work on building a platform that will provide simplified manipulation of reconfigurability is planned. Complex systems such as video processing algorithms are intended to be built and tested on this platform.

References