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TID – extended abstract

Model of a semiautomatic detection system.

A constituent objective of author's dissertation thesis is to develop semiautomatic analysing tools for application dealing with microscopic images of chips or microchips. The main purpose of these tools will be trying to find, determine or compose specific parts of picture data. The complexity of the final system causes necessity to use some model to prepare a stage for coding the application itself. Therefore a finite state machine will be used as a background for this application.

The application is supposed to deal with large images containing many elements. Moreover, processing will be performed not only within a single layer of a chip, but even within several layers to make a comprehensive insight into the chip structure and functions (rather into the _parts_ of the chip structure/functions, because it is usually impossible to reconstruct the whole chip with only that kind of information). Especially the requirement of semi automaticity of the tools should be kept in mind, since it brings many challenges to be solved.

The final model is going to be used as a design concept of the final program module and also for the validation of required actions that the system should perform according to its specification. As mentioned before, the model is expected to consist of many states. That is why the development (preserving decent level of quality) of the application is naturally almost impossible without a good model.

The source code of the semiautomatic detection module (the module will be one part of the whole application) will be split into logical parts considering the states of the final finite state machine. Moreover, graphical representation of the finite state machine can provide clues for programmers for better understanding of the application structure. That is why maintenance, with respect to (later) model modifications, is feasible without any extra effort.

Expected results

To summarize, it is important to model and describe the system properly. An assumption is to use any type of a finite state machine during the early design phase. After all modifications of the model, a deterministic finite state machine is desired since computers are strictly deterministic machines. Of course, various problems will come out; therefore a specific time period is needed to localise and describe the problematic parts. The outcome would be also a digital representation of the created finite state machine (a suitable representation written in some computer language) to allow effortless further work.