**Resume**

Of master degree thesis

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**Theme: “Model-based development of embedded software system with automatic extraction of architecture information”**

**Keywords:** Reverse engineering, reengineering, MDD, UML, Modeling, architecture reconstruction, software architecture, model to text, MOFM2T,

**Annotation:**

Software development is becoming a larger share in more and more industries. Respectively the embedded software penetrates more and more our lives, as its’ rate of distribution is enormous, following the amount of software embedded in devices is growing and its value for businesses is increasing rapidly. It is known from diverse case studies that 60-80% of the costs of a software product arise for program evolution. More than 50% of the time needed for program evolution is spent in understanding the program before the actual change can be designed and realized. As frequently used computer language for the development of embedded software is “C”, the abilities for using ready-made tools for reverse engineering and modeling are obscure.

The target for this thesis is the development of software architecture instrument which extracts information for the interfaces of the components in a software system written in “C” and represents UML model with the following artifacts: *classes*, *components* and *relations between components*. The instrument has to be able to generate base code for a new software system based on the extracted UML model. Having the extracted architecture information we facilitate the design of a new software system with similar requirements as well as the evolution and maintenance of the analyzed software system.

Using general definitions and methodologies from software architecture discipline, the provided solution focuses on: 1) the ability to extract architecture information and storing it in standard unified model (UML) from embedded software written in “C” and 2) to generate base code for development of similar system from the already extracted model. Here are presented conceptual model and requirements of such tool, as well as: design, implementation and way of testing.

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