

# mARGOt - Application Adaptation through Runtime Autotuning

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## Abstract

Several classes of applications expose a set of *tunable* parameters that influence their extra-functional properties, such as the quality of the result, the performance or the energy footprint. This leads the application designer to tune these parameters in order to find the configuration that produces the desired outcome. Given that the application requirements and the resources assigned to each application might vary at runtime, we can argue that finding a one-fit-all configuration is neither a trivial task nor the best solution.

For this reason, we implemented the mARGOt framework that enhances an application with an adaptation layer in order to continuously tune the application parameters according to the evolving situation. More in detail, mARGOt is composed of a monitoring infrastructure, an application-level adaptation engine and an extra-functional configuration framework based on the separation of concerns paradigm between functional and extra-functional aspects.

At the University Booth, we plan to show the automatic application configurator and code generator for instrumenting the application with the mARGOt API (see Figure 1). In particular, three demos taken from real-life applications will be used to demonstrate the effectiveness of the proposed infrastructure: A time-dependent routing module used in the context of a navigation system, a molecular docking kernel included in a drug-discovery system and a disparity estimation for a multi-view application. <sup>1</sup>

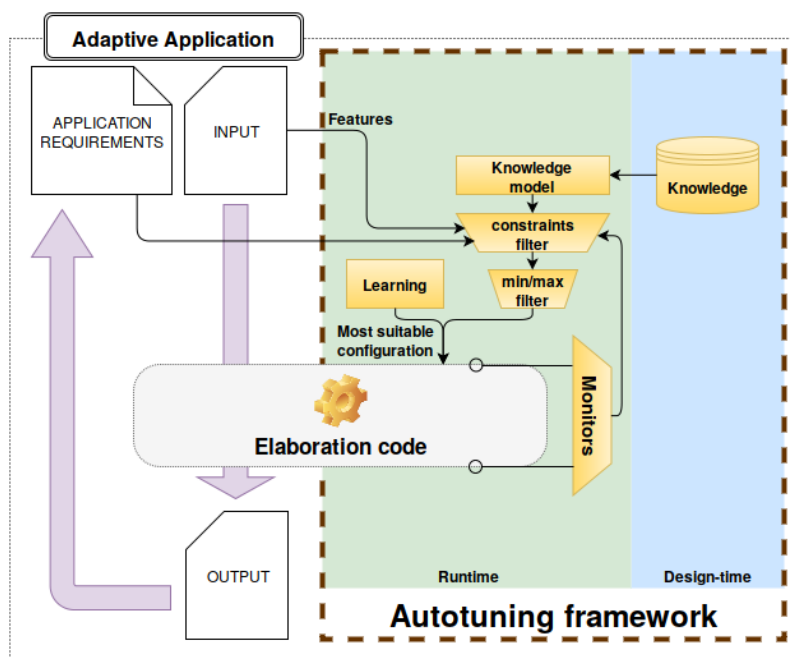


Figure 1: Overview of the adaptive application instrumented using mARGOt

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