Task Description for
Bachelor Thesis
Minor Thesis (Großer Beleg)
Master Thesis
Final Thesis (Diplomarbeit)

Thesis title:	**Benchmarking and Evaluating the Performance of Role-Oriented Programming Languages**
Supervisor:	**Lars Schütze (lars.schuetze@tu-dresden.de)**

Role-oriented programming will be a key concept in realizing future complex, adaptive software systems. Therefore, the object-oriented paradigm is extended with roles. Objects can play and remove roles at runtime. Playing a role changes the type of objects and may add or change attributes and methods to the object. Moreover, roles describe dynamic relationships between other objects

While the concept of roles originated from requirements analysis and data modeling role-oriented programming languages exists since the early 90's and new languages have been proposed up to date. All those programming languages have a different view on the concept proposing different solutions. While research found a common ground to classify the features of contemporary role-oriented programming languages, there has been no in-depth analysis of the performance of role-oriented programming languages and what impact features have on the performance so far.

The task of this thesis is to assess the performance of a class of role-oriented programming languages. Therefore, the student has to create a set of benchmarks that cover different variations of role-features. Those benchmarks must be implemented across different role-oriented programming languages. The thesis should evaluate the overall performance characteristics of the benchmark results and discuss how role features influence these characteristics.