Simulation and Software Construction of Cyber-physical Systems

Systems and software engineers realize increasingly, innovative functionality in cyber-physical systems by connecting embedded systems. The development of these systems becomes more challenging because the systems' complexity, the amount of safety-critical software, and the heterogeneity of the underlying platforms increases steadily. However, existing model-driven approaches do not cover the different engineers' concerns efficiently during the different development tasks.

In this talk, we propose an end-to-end development approach as the result of an ongoing Ph.D. project. This continuous development approach covers model-in-the-loop simulation, software to hardware allocation, and software construction in a model-driven way. Consequently, the approach is able to detect integration failures between discrete software parts and continuous system parts on the model level. Furthermore, it eases the specification and the solving of allocation constraints and it reduces the effort for engineers implementing the software for distributed, heterogeneous platforms. We validate our approach by providing an Eclipse-based integrated development environment and conducting software development case studies using cooperative, connected cars.

Es laden ein die Dozenten der Fakultät für Ingenieurwissenschaften, Informatik und Psychologie.

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gez. Prof. Dr. M. Tichy