CARL VON OSSIETZKY universität OLDENBURG

Fakultät II *Informatik, Wirtschafts- und Rechtswissenschaften*
Department für Informatik

Internes Kolloquium

Am **Montag, dem 21. Februar 2011,** um **16:15** Uhr hält

Nils Müllner
Universität Oldenburg

im Rahmen seiner beabsichtigten Dissertation einen Vortrag mit dem Titel

Unmasking Fault Tolerance: Masking vs. Non-masking Fault-tolerant System

Der Vortrag findet im Roten Rittersaal, A4-2-221 statt.

Zusammenfassung:

Fault tolerance is not only important where robustness and reliability of an application or tool is of priority concern, but also for the comfort of services of lesser importance like soft realtime applications where availability is an issue. Hence, tremendous efforts are spent in order to design and build fault-tolerant applications and devices that are competitive on the open market. Nevertheless, as devices and requirements become more and more complex, it becomes even more challenging to retain a certain threshold of fault tolerance. On the other hand, new objectives arise such as low energy consumption or service coverage, that even contradict to spending resources on fault tolerance.

There are four sorts of fault-tolerant systems defined throughout literature: intolerant, fail-safe, non-masking and masking fault-tolerant systems. An intolerant system works without any guarantees or assertions about its correctness, if it works at all. A fail-safe system is equipped with detectors that trace faults and bring the system to a halt to prevent it from working off its specifications, i.e., safety properties are never violated but liveness properties might be. On the contrary, non-masking fault-tolerant systems employ correctors to maintain an operational status and support repair mechanisms while they do not necessarily comply with their program specification during a repair phase. Masking fault-tolerant systems finally comprise of both, detectors and correctors, to delay responses if faults have been detected until they have been corrected. Notably, correctors do not necessarily explicitly require detectors.

This work focuses on the gap between non-masking and masking fault-tolerant systems. Recent literature focused on the compositional design to be able to add new fault tolerance features to comply with changing requirements, which means, the extremes of intolerant, fail-safe, non-masking and masking. This thesis takes a steeper look on developing a (probabilistically) masking fault-tolerant system and how it can be accomplished in a reasonable inexpensive manner.

Betreuer: Prof. Dr.-Ing. Oliver Theel