Automated Testing
(of Real-Time Systems)

Specialeforløb
Brian Nielsen
&
Kim G. Larsen
State of the Art (Manuel) Testing

- Ad Hoc, Errorprone, Tedious, Laboursome
- Expensive 30-50% of development time
- Inefficient
- “Testers are people which cannot program”
- Good testers
  - get royal sallaries
  - play with very, very, very expensive equipment
Automated Conformance Testing

Does the behavior of the (blackbox) implementation comply to that of the specification?

Little support for real-time constraints
Possible Directions

**UppAal Real-Time Test Generation Tool**

- UppAal Modeller
- Test selection, time selection
- On-the-Fly generation + execution
- Test case optimization
- Stochastic extensions

Test execution tool
- Real-time precision
- Re-usability
- Diagnostics

Application of (existing) tool
- Siemens, lugeMarie,
- AAUSAT, MindStorms
Collaboration

• Siemens:
  - Project on Automated Software Testing
  - 50% sponsored

• TOMAS
  - “Netværk for Test og Modelering af Software”

• University of Twente
  - ioco
  - TorX test tool

• AMETIST

• Voodes
Effective and Practical Test Tool?

Detailed presentation
Wednesday d. 9/6 kl 11.00 i lokale E1-214