

## **Tutorial Title: Model-Based Testing**

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### **Abstract**

Model-based testing is a software testing technique in which test cases are derived from a model of the system under test (SUT). It allows checking the conformity between the implementation and the model of the SUT, introducing more systematization and automation into the testing process.

This tutorial includes five topics:

It starts with an introduction to the model-based testing process: describes how it fits into a typical software life cycle, how model-based testing differs from other testing approaches and discusses the benefits and limitations as well as the preconditions for its adoption.

Follows a discussion about issues related to the construction of the SUT model, such as the choice of the right level of abstraction (which characteristics to include/omit in/from your model), and analyses different models that are useful for test case generation.

Third topic will look over different test coverage criteria (to guide the construction of test cases, to decide when to stop testing and to measure the adequacy of a test suite).

Next topic presents techniques to fill the gap between abstract and concrete test cases to automate the test case execution.

Finally, a case study, supported by a model-based testing tool, will be presented going through the whole testing process.

### **Brief CV**

Ana Paiva is an Assistant Professor at FEUP - DEEC and member of the Software Engineering Group ([www.fe.up.pt/~softeng](http://www.fe.up.pt/~softeng)). She has a PhD in Electrical and Computer Engineering from FEUP with a thesis titled "Automated Specification-Based Testing of Graphical User Interfaces". Her expertise is on the implementation and automation of the model-based testing process. She has been developing research work in collaboration with Foundation of Software Engineering research group within Microsoft Research where she had the opportunity to extend Microsoft's model-based testing tool, Spec Explorer, for GUI testing.

