TouchCORE v 4.0 User Guide

Software design is difficult because there are usually many ways to solve a specific design problem, each solution having advantages and disadvantages. The designer must carefully consider how each solution positively or negatively affects the stakeholders high-level goals and the non-functional properties of the application under development before choosing one solution over another.

TouchCORE is a multitouch-enabled tool for agile, concern-oriented software design modelling, enabeling large-scale, multi-view model reuse. In TouchCORE, a *concern* encapsulates one or several solutions to a specific design problem. The different variants encapsulated by a concern are expressed using feature models, and the impact that each variant has on non-functional qualities of the application can be expressed using goal models. The structure of the design variations are expressed using class diagrams, whereas the behaviour of the variations are expressed using sequence diagrams. Finally, protocol state machines can be used to specify invocation protocols in order to ensure proper use of design concerns.

Running TouchCORE

On Windows, you should be able to open (double-click) the TouchCORE.bat. On the Mac, simply open TouchCORE.jar. In general, you can run TouchCORE from the command-line using "java -jar TouchCORE.jar".

Currently, on the Macintosh, TouchCORE requires Java 1.6. In other words, it will NOT run if the default JRE is set to Java 1.7 or Java 1.8. To run TouchCORE if you have Java 7 or 8 (provided by Oracle) installed on your Mac, make sure you first install Java 1.6 (provided by Apple) as well. Then, from a command line, run Java 1.6 by issuing a command like: /System/Library/Java/JavaVirtualMachines/1.6.0.jdk/Contents/Home/bin/java -jar TouchCORE.jar

TouchCORE Settings

TouchCORE can run in windowed or fullscreen mode. To toggle from one mode to the other, adjust the corresponding line in the Settings.txt file.

Troubleshooting

If you encounter memory problems, please run TouchCORE with the VM argument -Xmx<amount of memory> (e.g., "-Xmx1024m" for 1GB of memory). In case of issues with TouchCORE or feature requests, please open an issue on our issue tracker (https://bitbucket.org/mcgillram/touchram/issues) or send an email to the TouchCORE developers Joerg.Kienzle@mcgill.ca or mschoettle@cs.mcgill.ca

Getting Started with Concern-Orientation

A well-written user guide explaining how to design with concerns is not available. If you are interested, please consult one of the publications on concern-oriented software design, e.g.:

- O. Alam, J. Kienzle, and G. Mussbacher, "Concern-oriented software design," in Proceedings of the 16th International Conference on Model-Driven Engineering Languages and Systems - MODELS 2013, vol. 8107 of Lecture Notes in Computer Science, pp. 604–621, Springer Berlin Heidelberg, 2013.

- O. Alam and J. Kienzle, "Incremental software design modelling," in Proceedings of the 2013 Conference of the Center for Advanced Studies on Collaborative Research, CASCON '13, (Riverton, NJ, USA), pp. 325–339, IBM Corp., 2013.

If you just want to start using TouchCORE as a class diagram modelling tool, simply think of a concern like a way to group the different models that you are building. In some way, a concern is what a typical "project" is in a development environment such as Eclipse. So to get started, create a new concern (click new concern, create a new folder, then select that folder). You will then see the feature model view of the concern, with a single feature named after the concern appearing on the top. To start modelling class diagrams, click-and-hold on the feature, then select "New Aspect". You will then find yourself in the class diagram editing view.

TouchRAM Gestures Quick Reference

Class Diagram

	Tap / Click	Double-Tap / Double-Click	Tap & Hold / Click & Hold	Drag
Background	-	-	Create New Class	Pan (2 fingers/left button)
Class	Select/Deselect	-	Switch to **"Edit"** Mode	Move Class (Selected Classes)
Class Name	-	Change Name	Toggle Partial	-
Field Name	-	Change Name	Toggle Static, Create Getters and Setters	-
Field Type	-	Select Type	-	-
Operation Name	-	Change Name	Toggle Partial, Static, Goto Message View	-
Operation Type	-	Select Type	-	-
Operation Visibility	-	Select Visibility	-	-
Parameter Name	-	Change Name	-	-
Parameter Type	-	Select Type	-	-
Association End	-	Select Type/Delete	Toggle Navigability	-
Association Name	-	Change Name	-	-
Association Multiplicity	-	Change Multiplicity	-	-
Instantiated Concern Name	-	Display Woven Concern	Weave Woven Concern	-
Extended Aspect Name	-	Display Aspect	Weave Aspect	-

Edit Mode

	Tap	Double-Tap	Tap & Hold
Background	Exit Edit Mode	-	-
Other Class	-	Create Association	Create Inheritance

Use the **+, +A, +O** and **x** icons to: delete the class, create new fields, delete fields, create new operations, delete operations, add parameters, delete parameters
When typing attributes or operations, it is mandatory to adhere to the following format:

- Attributes: type_name attribute_name (all attributes are always private)

- Operations: visibility return_type_name operation_name (parameter_type_name parameter_name, ..)

Touch Gestures

- Draw a rectangle on the background: Create New Class
- Draw an X over a class (moving top left - bottom right - up right - bottom left): Delete a Class