ACT-Droid: ACT-R Interacting with Android Applications

Lisa-Madeleine Dörr & Nele Russwinkel & Sabine Prezenski
Technische Universität Berlin, Germany
Chair of Cognitive Modelling in Dynamic Human-Machine-Systems (KMoDyS)

Introduction

**Keywords:** ACT-R; Android; granularity; usability testing; modeling; mobile context; tool.

ACT-Droid is a tool that connects ACT-R models with Android applications on smartphones. It is based on "Hello Java" (Büttner 2010).

The main benefits of ACT-Droid are:

- no prototyping of the application is needed.
- no Lisp code for normal use of ACT-R modeling necessary.
- usability testing is feasible (in submission), (Prezenski & Russwinkel, in submission)
- the content of the screen can be described as detailed as necessary, the granularity is only limited by the structure of the visicon.
- attributes of the elements appearing in the visicon can also be adjusted.

Technical Details

The two main tasks ACT-Droid fulfills are: performing motor output of ACT-R within the app and updating the visicon of ACT-R according to the changing app screen. These functionalities are provided by the model interface and the app interface.

Motor

Currently, ACT-R's mouse commands are interpreted as fingertip touches by the Android app. So, if the app interface receives a click command, it performs a tap.

Soon, it will be possible to use the touch commands of ACT-Touch (Greene, Tamborello, & Micheals, 2013).

Visual

The app interface provides a description of everything that is visible. It searches recursively through all views and generates descriptions of every visible checkbox, button and textfield. It is possible to define special objects, too.

The model interface then loads the description into the visicon.

How To

ACT-Droid can be downloaded from [http://dx.doi.org/10.14279/depositonce-5181](http://dx.doi.org/10.14279/depositonce-5181) (see Qr-Code left). Included are detailed instructions, an app example and a very basic ACT-R model. This simple model will randomly explore and click on everything. The prerequisites for using ACT-Droid are the following:

- Lispworks
- ACT-R source files
- Android Studio with the source files of the app (only necessary during set-up),
- an Android smartphone to run the extended app on,
- and the computer and the smartphone have to be in the same network.

To run the model you only have to start the app and afterwards the ACT-R model. The model will then interact directly with the app.

Outlook

- implementing scrolling
- thorough tests with different apps
- further simplification of the set-up and usage, e.g. when having more than one Android activity (common)

Soon, we will provide a version with the touch commands of ACT-Touch instead of the mouse commands. This is the next step towards an adequate tool for efficient usability testing of apps.

References


Download ACT-Droid

Lisa-Madeleine Dörr
Email: lisa-madeline.m.doerr@campus.tu-berlin.de

Nele Russwinkel
Email: nele.russwinkel@tu-berlin.de

Sabine Prezenski
Email: sabine.prezenski@tu-berlin.de

www.kmody.s.tu-berlin.de
Sekr. MAR 3-2
Marchstraße 23
10587 Berlin