Tutorial E - Modeling crash-course using the VBA toolbox

Content

In this hands-on tutorial, you will apply computational modeling to a real-life example. Starting from a simple experimental design (delay discounting task), you will learn how to: (a) choose and implement the right model for your task, (b) fit it to empirical data (and get parameter estimates), (c) perform hypothesis testing using model selection, (d) validate your analysis using simulations and diagnostic tools. You will also learn the basics of the VBA-toolbox which contains all the tools to simulate, estimate, and diagnose your models, as well as a collection of ready-to-use models (e.g. Q-learning, DCM). No previous experience with modeling is required, but basic knowledge of MATLAB is recommended.

Installation guide

1. In the tutorial we will use MATLAB. Please make sure you install MATLAB and that you can open and run it https://www.mathworks.com/products/get-matlab.html

2. Next, follow the instructions provided there: https://mbb-team.github.io/VBA-toolbox/download/
    You will be provided with 2 possibilities to download the toolbox:
    *   Downloading the toolbox via .zip File.
    *   Cloning the toolbox. This allows you to keep up-to date with future changes in the toolbox. You will however need to install git on your machine.

    For the purposes of the tutorial and if you do not have git, we advise you to use the first possibility and only download the .zip File. In that case, unzip the file and put it in a folder/directory which you will use for the practical tutorial (*e.g.,* Desktop/CPC2024/ModellingCrashCourse).

3. Open MATLAB and, in MATLAB, navigate to the folder/directory you prepared (*e.g.,* "ModellingCrashCourse"). Change your working directory (the folder you are currently in) to the VBA-toolbox folder by using the "Current Folder" window.

4. In the Matlab Command Window run the following command:
    `VBA_setup()`

5. Feel free to type `demo_Qlearning` to try a demo out and see if it runs!

Further support

If you cannot get enough of the VB-Toolbox, there is an entire wiki on the Toolbox to explore: http://mbb-team.github.io/VBA-toolbox/wiki/

If you have trouble getting to this point before the Practical Tutorial Session, please consult the **#tutorial-helpdesk channel on Discord**. You will be given access to the CPC Slack workspace at the beginning of the course. Check if anyone has had the same issue and has managed to solve it and how. If no one else has encountered the same problem, post your question. We will be monitoring the channel and providing support. In addition, given the volume of attendees this year, we would be really grateful if you could assist us by answering queries on Discord yourself if you come across a problem, you know and have solved.

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