

A challenging task: on the optimality and forward looking behavior of professional tennis players – DATA and CODE

General Remarks

The files in this folder are divided to data files, Stata code files and MATLAB code files. These files were moved from their original place on the file system, so make sure that the folders are specified correctly in the code (especially in Stata, as all MATLAB code is working on the same directory).

Producing the tables in the paper

1. Remember to change paths in the code according to where the files are on your computer (make sure relative paths are also right).
2. Run `prep_data.do` (under Stata). It will create the main file that we'll work on.
3. To produce Tables 1-3 (and A1), see `Stata\redform.do`.
4. To produce Figure 1 (and A1), simply run `ksdensity` in Stata (or `ksdensity` in Matlab).
5. To produce Table 4, run `table4 = trySimulateMatchFunc('SUFFIX', 1, 0.02, 0.295)` in MATLAB. The output of the function is a table like table 4. Instead of 'SUFFIX' you can put whatever string you want. The program uses it to name different files that are produced by this call. This will also produce Figure 4 (look for the `figures_data_F_alph1_pcc0p02_intrcpt0p295.mat` file and plot the columns you want in Matlab).
6. To produce Table 5, open `robustnessChecks.m` in MATLAB and run it.
7. To produce Figure 3, run `plot_Paot_f_of_p.m`

Detailed description of the files in this folder

<u>Subfolder</u>	<u>File</u>	<u>Purpose</u>
Data\	point_data7.dta	Challenge-level data.
Data\	match_data.dta	Match-level data.
Data\	shanghai_for_roy.dta	Additional match-level data from the Shanghai tournaments
Stata\	calc_playing_pr.ado	Used to calculate the importance and option value measures
Stata\	prepare_restricted_dataset_for_matlab.do	Prepares the challenges dataset for Matlab's trySimulateMatchFunc.m
Stata\	prep_data.do	Preps the data for analysis (cleans up, calculates importance etc using calc_playing_pr.ado)
Stata\	redform.do	Produces Tables 1-3
Matlab\	calcValues.m	The function that calculates the optimal policy (and value) for the states in the match.
Matlab\	calcValuesFromKnownPmots.m	The function that calculates values given policies for the states in the match.
Matlab\	compareData2Optimal.m	A function that takes what calcValues returned and compares it to the data. Creates figures like figure 4 (just without the confidence interval, see Matlab\Obsolete for the CI)
Matlab\	p_aot.m	A function encapsulating the Paot(Pmot)
Matlab\	plot_Paot_f_of_p.m	Produces Figure 3.
Matlab\	robustnessChecks.m	Produces Table 5. Runs several processes of Matlab in parallel to run trySimulateMatchFunc with different values.
Matlab\	score.m	The score class. Contains the structure of a score (including challenges left) and all related functions.
Matlab\	tryCalcValuesFunc.m	Runs calcValues over a grid of P_serve, P_receive
Matlab\	trySimulateMatchFunc.m	Runs tryCalcValuesFunc, compareData2Optimal, and calcValuesFromKnownPmots for the observed, random and never challenge strategies
Matlab\Obsolete\	p_aot_model_vs_reality.do	Prepares Figure 4, and other tables that are now done in Matlab. The only thing it contributes is the prediction's CI.
Matlab\Obsolete\	tryCalcValuesInChunksFunc.m	Like tryCalcValuesFunc, but iterates only over P_receive, having P_serve already given
Matlab\Obsolete\	tryCalcValuesInChunks_1.m – to – tryCalcValuesInChunks_5.m	Runs tryCalcValuesFunc with P_serve=0.1 to 0.9
Matlab\Obsolete\	raw2work.do	Takes the 5 chunks calculated in the tryCalcValuesInChunks_# programs, and prepares them for merging by p_aot_model_vs_reality.do