Spring 2023 Computation Camp

Instructor: Yikai ZHAO

Our intensive courses introduce how to code in MATLAB and Python as a beginner. Simultaneously, to transfer freely from one language to another, we will show how to solve the same problem in different programming languages. For example, how to load tables and merge them using Python, R, and Stata, separately; how to run matrix using MATLAB and Python separately; how to estimate OLS regression using Stata and R. MATLAB and Python are our main languages to learn, while experience in R or Stata would be beneficial.

Syllabus (tentative)

[1] Introduction: M Script (MATLAB); Jupyter Notebook (Python); Connect MATLAB and Python

[2] Basic Knowledge I: Data Type; Arrays and Matrices

[3] Basic Knowledge II: Arrays and Matrices: if, while, for; Define Functions

[4] Basic Knowledge III: Data Processing Method (Python, R, and Stata): load files, write files, merge tables

[5] Basic Knowledge IV: Data Processing Method (Python, R, and Stata): outliers, missing values, grouping statistics

[6] Visualization

[7] Optimization Method

[8] Statistical Analysis

[9] Presentation [Final Homework]

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
February (2023)	12	13	14	15	16 [1]	17 [2]	18
	19	20 [3]	21 [4]	22 [5]	23 (homework)	24 (homework)	25
	26	27 [6]	28 [7]	1 [8]	2 [9]	3	4
Class hours	Afternoon: 14:00-17:00 (Class) 17:00-18:00 (Q&A)						

Textbooks used:

• Brian R Hunt, Ronald L Lipsman, and Jonathan M Rosenberg. A guide to MATLAB: for beginners and experienced users. Cambridge university press, 2014.

• Mario J Miranda and Paul L Fackler. Applied computational economics and finance. MIT Press, 2004.

• David Beazley and Brian K Jones. Python Cookbook: Recipes for Mastering Python 3. " O'Reilly Media, Inc.", 2013.

Prerequisites:

• Students are required to install both MATLAB (our university has a student license) and Jupyter Notebook (free);

• Each student needs to bring his/her laptop (a wiring board is appreciated since the class might not have enough sockets);

• Students are expected to stay through the course, including the presentation.