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Abdelbacet Mhamdi

Dr.-Ing. in Electrical Engineering

Senior Lecturer at ISET Bizerte

abdelbacet.mhamdi@bizerte.r-iset.tn

Artificial Intelligence - Part 1

LAB MANUAL

Institut Supérieur des Études Technologiques de Bizerte

Available at https://github.com/a-mhamdi/isetbz/

Honor code

The University of North Carolina at Chapel Hill
Department of Physics and Astronomy
http://physics.unc.edu/undergraduate-program/labs/general-info/

"During this course, you will be working with one or more partners with whom you may discuss any points concerning laboratory work. However, you must write your lab report, in your own words.

Lab reports that contain identical language are not acceptable, so do not copy your lab partner's writing.

If there is a problem with your data, include an explanation in your report. Recognition of a mistake and a well-reasoned explanation is more important than having high-quality data, and will be rewarded accordingly by your instructor. A lab report containing data that is inconsistent with the original data sheet will be considered a violation of the Honor Code.

Falsification of data or plagiarism of a report will result in prosecution of the offender(s) under the University Honor Code.

On your first lab report you must write out the entire honor pledge:

The work presented in this report is my own, and the data was obtained by my lab partner and me during the lab period.

On future reports, you may simply write "*Laboratory Honor Pledge*" and sign your name."

Contents

In order to activate the virtual environment and launch **Jupyter Notebook**, we recommend you to proceed as follow

① Press simultaneously the keys  &  on the keyboard. This will open the dialog box **Run**;

② Then enter **cmd** in the command line and confirm with  key on the keyboard;

③ Type the instruction **jlai.bat** in the console prompt line;

④ Finally press the  key.

Leave the system console active.

A. Mhamdi

1 | *Julia* Onramp

Student's name	. . . . .	. . . . .	. . . . .
	. . . . .	. . . . .	. . . . .
	. . . . .	. . . . .	. . . . .
Score /20	. . . . .	. . . . .	. . . . .

Detailed Credits

Anticipation *(4 points)*	. . . . .	. . . . .	. . . . .
Management *(2 points)*	. . . . .	. . . . .	. . . . .
Testing *(7 points)*	. . . . .	. . . . .	. . . . .
Data Logging *(3 points)*	. . . . .	. . . . .	. . . . .
Interpretation *(4 points)*	. . . . .	. . . . .	. . . . .

Goals

★ Learn the essentials of *Julia* on commonly used features & workflows.

The notebook is available at `https://github.com/a-mhamdi/cosnip/` → *Julia* → *julia-onramp.ipynb*

2 | Tipping Problem

Student's name	. . . . .	. . . . .	. . . . .
Score /20	. . . . .	. . . . .	. . . . .

Detailed Credits

Anticipation *(4 points)*	. . . . .	. . . . .	. . . . .
Management *(2 points)*	. . . . .	. . . . .	. . . . .
Testing *(7 points)*	. . . . .	. . . . .	. . . . .
Data Logging *(3 points)*	. . . . .	. . . . .	. . . . .
Interpretation *(4 points)*	. . . . .	. . . . .	. . . . .

Goals

★ Construct algorithms to help decide in given ambiguous situation.

The code is available at `https://github.com/a-mhamdi/isetbz/` ⟶ *Artificial Intelligence* ⟶ *Codes* ⟶ *Matlab* ⟶ *Tipper.**

Matlab is an indispensable tool for engineers. The immediate reason is because of all what you need in Matlab is the basics pieces of informations needed to solve the problem. There is no need to configure your environment to adopt your algorithm, just know a little bit about the syntax.

Matlab is an easy to use environment, it is a fourth-generation programming language[1] (4GL). It is a very high level language.

Matlab is an interactive matrix calculator, with a full-fledged programming environment. Matlab as a language is extremely frustrating to handle with general tasks and very delicate purpose. Your focus

[1] `http://en.wikipedia.org/wiki/Fourth-generation_programming_language`

with Matlab is what you need to program not how to program it.

2.1 Matlab desktop

2.1.1 Desktop layout

Like any other environment, we dispose in Matlab a menu bar and a tool bar where user can find the major commands needs to configure the preferences of Matlab, this means how to let Matlab behaves. Then, the main interface is split into four majors areas as shown in figure **??**.

Area 1

it is the Command Window, where user can strike the Matlab commands and see results displayed on the same screen.

Area 2

It is the Workspace. All variables are saved in this area. If you need to know more about saved variables, just try this command on area 1:

```
>> whos
```

The results are the names of variables, the min and max values for every variables, class and the number of bytes needed to save it.

Area 3

It is the Current Folder, the path indicated by Matlab to execute a particular code. if you need to execute an algorithm which is not on the path shown by are 4, you have then to change the folder. Otherwise, an error message will be displayed on command window if it is not the absolute path.

Area 4

It is the Command History, where all instructions are saved in a panel from the date of installing Matlab on your machine until now.

2.1.2 How to personalize the desktop layout

In the menu bar, click on Desktop, Desktop Layout then load your preferences. For example, here the customized layout was saved under the name MyLayout. You just click on it, and your layout appears like the display shown on figure **??**.

Matlab is not just an environment for technical computing, where we can solve equations. It is also an environment of graphical interfaces development. This integrated software is called