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1 Overview

This manual tells about the structure of the educational material “Bayesian Decision Making” developed under the Edukalibre project. The manual is believed to help both the the developer to test and edit the material.

2 Where Edukalibre is available

2.1 Svn repository

If you read this manual, it means, you have already made checkout (or you have obtained a copy on CD) from <http://marabu.utia.cas.cz:1800/svn/educalibre>. It is strongly recommended to make update before the start of the work.

- `svn update http://marabu.utia.cas.cz:1800/svn/educalibre /home/your_folder/educalibre`
- or
- with the help of your `svn-client` by the button of mouse..

2.2 Moodle

Demo-versions of material and packages for download are available at <http://moodle.utia.cas.cz>. If you have downloaded the edukalibre examples from Moodle or have obtained it on CD, don't change the order of location of the files.

3 Special requirements before work

First of all, you should check, whether you have Octave (<http://www.octave.org/>) installed at your computer. If not, then

- **Linux:** use your package manager to install octave and gnuplot,
- **Windows:** GNU Octave 2.1.50.exe is in `/educalibre/universal_distribution/octave_install/`.
Attention: Windows version of the Edukalibre setup is prepared now only for Octave 2.1.50.

4 How to use Edukalibre at Linux

In order to run the edukalibre exampes you should:

1. `cd /home/your_folder/educalibre/universal_distribution/template;`
2. `kpdf (or xpdf) edbook_uni_instal.pdf.`

`Edbook_uni_instal.pdf` will offer you a table of contents, where you have to choose the decision-making task, you are interested in. Read the description attentively. The important concepts of Bayesian decision-making as well as the variables provide their definitions and brief description by clicking on them. Use knob “Contents” to come back to the list of examples. In the bottom of page you will see the path to the corresponding m-file. Open Octave and run this file. Using the dialog, which Octave will offer to you, try to make the recommended experiments, provided in `edbook_uni_instal.pdf`.

A knob “Read me” provides a brief guide how to use the examples. The beginners are strongly recommended to read the guide.

Remark: In principle, this distribution is the universal one, it means, it suits to any operation system.

5 How to use Edukalibre on Windows

To run the edukalibre examples you should:

1. go to `\edukalibre\universal_distribution` and run `setup.msi`. It is recommended to close all the programs before installation.
2. choose directory (whatever you want) to install the examples. Attention: it is not recommended to install Examples to a directory under version control;
3. go to your desktop and run `Edukalibre.pdf`, which will be created automatically.

`Edukalibre.pdf` will offer you a table of contents, where you have to choose the decision-making task, you are interested in. Read the description attentively. The important concepts of Bayesian decision-making as well as the variables provide their definitions and brief description by clicking on them. In the bottom of page you will see several hyperlinks. The most important among them is “Run example”. Click on it and it will open Octave and run the corresponding example. Using the dialog, which Octave will offer to you, try to make the recommended experiments, provided in `Edukalibre.pdf`. If you need to start Octave without running the example, use the link “Run Octave”. If you want either look at the source code or edit it, use “Edit m-file”. Use link “Contents” to come back to the list of examples.

6 How to edit Edukalibre

Your directory, where you have made checkout from repository or have copied, contains two subdirectories: `universal_distribution` and `AS`. The last one will be used ONLY when editing the edukalibre material. It contains majority of style \LaTeX documents, created for preparation of examples and it serves, primarily, for setting the \LaTeX paths and preparing the termbase of Bayesian decision-making.

6.1 \LaTeX path setting and the termbase preparing at Linux

To set the paths you should:

1. `cd /home/your_directory/AS/texutils/include/;`
2. `linsetup.sh;`
3. `cd /home/your_directory/AS/bibtex;`
4. `linsetup.sh;`

After you have set the paths, you can edit the Edukalibre material.

6.2 \LaTeX path setting and the termbase preparing on Windows

To set the paths you should:

1. go to `your disk:\your_directory\AS\texutils\include;`
2. run `winsetup.bat;`
3. `cd your disk:\your_directory\AS\bibtex;`
4. run `winsetup.bat;`

After you have set the paths, you can edit the Edukalibre material.

6.3 How to edit the text of examples

File `/universal_distribution/template/edbook_uni_instal.tex` (at Linux) or at the same directory `edbook_win.tex` (on Windows) is the main document for the Edukalibre examples, that have to be compiled with `pdflatex` after editing.

Directory `/template` contains two subdirectories `edcoin` and `ednormal`, which contain both the \LaTeX - and `m`-files for the chapters “Basic Tasks with Discrete Model – Controlled Coin with Memory (CCM)” (designed by I.Nagy) and “Basic Tasks for Normal Auto-Regression Model with External Input (ARX)” (designed by L.Pavelkova) respectively.

File `edbook_uni_instal.tex` (`edbook_win.tex`) includes the next files:

```
\include{edcoin/edcoin}          %% edcoin.tex in /template/edcoin
\include{ednormal/ednormal}      %% ednormal.tex in /template/ednormal
```

Both `edcoin.tex` and `ednormal.tex` have the same structure and include the files from their directories with the texts of the examples that should be edited.

For instance, `edcoin.tex` looks like:

```
\chapter{Basic Tasks with Discrete Model -- Controlled Coin with Memory (CCM)}
several words about a chapter...
```

```
\renewcommand{\path}{edcoin/}
```

```
\section{Simulation of Discrete Model}
several words about a section...
```

```
%\newpage\input{\path d01sim}
%\newpage\input{\path d02sim}
```

Find the file, which you want to edit, among the files included either in `edcoin.tex` or `ednormal.tex` and edit it. Then

1. go to `/universal_distribution/template`;
2. make `pdflatex` for `edbook_uni_instal.tex` (at Linux) or (`edbook_win.tex`) (on Windows);
3. if you changed something concerned with links to the termbase, make `pdflatex termbase.tex`;
4. open `edbook_uni_instal.pdf` (at Linux) or (`edbook_win.pdf`) (on Windows) and check the results.
5. Attention: In case of Windows the results will not influence on the installation with `setup.msi`, but ONLY on the files with the source codes at directories `/universal_distribution/template`.

6.4 Definitions and commands

All the definitions and commands for the texts of examples are in files `/template/edrootdef_linux.tex` (at Linux) and `/template/edrootdef.tex` (on Windows).

Two these files contain the same set of commands, excepting `\Combs`, `\Mainpage` and `\Use`. These commands manage the knobs at the bottom of the example page.

6.5 How to edit m-files

Majority of `m`-files have the same names as the \LaTeX files, corresponding to them. In order to see the name of `m`-file, open the respective `.tex`-file and look in the end of document. You will see, for instance:

```
\Combs{d01Sim}{edcoin}          %% see newcommands in edrootdef_linux.tex (edrootdef.tex)
```

6.6 How to edit termbase

File `/template/termbase.tex` is renewed automatically after making `pdflatex` for `/template/edbook.tex`. Don't edit it manually! Make `pdflatex` for `/template/termbase.tex`, if you have changed something concerned with the links to `termbase.pdf`.

For more details about editing the termbase, see the documentation at `/AS/texutils/doc/termbase`.

6.7 How to edit the theory

File `universal_distribution/badecmak.tex` is the main \LaTeX document for theoretical part of Edukali-
bre that should be compiled after editing of the files included. `badecmak.tex` includes the next files,
located at the same directory:

```
\include{01}           % introduction
\include{02}           % underlying theory
\include{03}           % decision making tasks
\include{04}           % evaluation (sub-optimal decisions)
\include{11norm}       % scalar static regression model with normal noise
\include{21disc}       % controlled coin with memory
\include{99app}        % appendix
```

Edit what you find reasonable and make `pdflatex` for `badecmak.tex`. Open `badecmak.pdf` and look at results.

Definitions and commands for theoretical part are in file `definitions.tex`.

6.8 Bibliography

`badecmak.tex` uses `\bibliography{mk,dept,world}` from `/AS/bibtex`.

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