Lesim-Mode: Edit Learning Simulator Scripts in Emacs

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1 Introduction

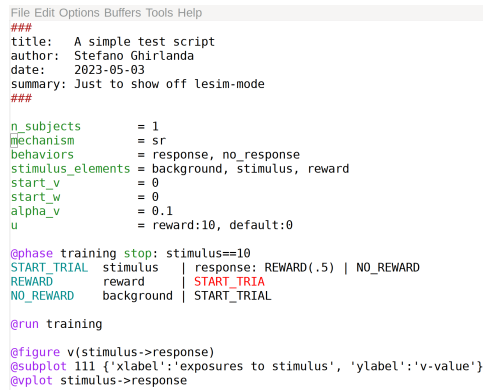Lesim-Mode is an Emacs major mode to write and run Learning Simulator scripts. It features:

- Syntax highlighting.

- Align parameter blocks at the = sign.[1]

- Align phase lines at | signs.

- Highlight misspelled stimuli, behaviors, and line names in phase blocks.

- TAB moves by field in phase blocks.

- Insert script template.

- Run scripts through the Learning Simulator and highlight errors.

Lesim-Mode does not understand the full Learning Simulator syntax. That is a job for Superman, that is, Learning Simulator chief software architect Markus Jonsson.

2 Installation

Install from here for now, hopefully from MELPA later.

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[1]The earlier Learning Simulator syntax using : for assignments is not supported by Lesim-Mode.

```
File Edit Options Buffers Tools Help
###
title:   A simple test script
author:  Stefano Ghirlanda
date:    2023-05-03
summary: Just to show off lesim-mode
###

n_subjects        = 1
mechanism         = sr
behaviors         = response, no_response
stimulus_elements = background, stimulus, reward
start_v           = 0
start_w           = 0
alpha_v           = 0.1
u                 = reward:10, default:0

@phase training stop: stimulus==10
START_TRIAL  stimulus  | response: REWARD(.5) | NO_REWARD
REWARD       reward     | START_TRIA
NO_REWARD    background | START_TRIAL

@run training

@figure v(stimulus->response)
@subplot 111 {'xlabel':'exposures to stimulus', 'ylabel':'v-value'}
@vplot stimulus->response
```

Figure 1: Sample screenshot

3 Quick start

- Syntax coloring is enabled automatically. It also highlights some errors, line unassigned parameters.

- `TAB` behavior:

    - In a parameter block, it aligns the block.
    - In a phase block, it aligns the block, highlights misspelled stimulus elements, behaviors, and phase line names, and moves to the next field. At the end of the phase block, it moves back to the beginning

- Press `C-c C-r` to run the script in the Learning Simulator (see 5).

- Press `C-c C-t` to insert a template to get started on a script (see 5).

4 Learning Simulator

You can learn about the Learning Simulator from these sources:

- The Learning Simulator Website

- Learning Simulator documentation on Read The Docs

- Short article in the Journal of Open Source Software

5 Configuration

Using `M-x customize-group lesim` you can configure:

- The command used to run the Learning Simulator (default: `lesim.py`).

- The key binding to run scripts (default: `C-c C-r`).

- The key binding to insert a template script (default: `C-c C-t`).

- Whether to insert a template script automatically upon opening an empty `.les` file (default: `nil`).

- Other minor items detailed in the customization buffer.

6 Planned features

- Shift-TAB to move back by field in phase blocks.

- Look up parameter definitions and default values in lesim.py source online.

- Parse assignments to highlight syntax and content errors.

- Highlight and validate plotting commands.

- Add Lesim menu.

Please suggests features as issues on Github.

7 Bugs

- The content of multiline comment blocks is highlighted as regular script text.

Please report bugs as issues on Github.