EPFL

Master Project Proposal

Robotic Sculptures for Education

Sthymuli: User experience programming and validation

Supervisors
Manuel BL & Léa Pereyre

Professor
Francesco Mondada

ROBOTIC SCULPTURES FOR EDUCATION
Sthymuli: User experience programming and validation

Introduction:
At the MOBOTS Lab, we are interested in merging robotics, art, and education into a framework of tools capable of addressing some of the technology integration barriers teachers face in the digital age *(Ertmer 1999)*.

In previous projects, the lab has pursued the ideation and prototyping of a new educational robot: ***Sthymuli***. This prototype requires further development and testing to validate its usability and potential benefits for teachers, as well as its impact in different classroom settings.

This Master's Project (MP) aims to complete the previous developments of Sthymuli, and redesign its current graphic interface and user experience capabilities while testing and evaluating them with the EPFL community and possibly with a group of volunteer teachers (pre-service or in-service).

Objectives:
The main objective of this MP is to create a functional robot, well documented, and tested with the EPFL community and a group of teachers (pre-service or in-service). The consequent milestones of the project will be:

1. Putting together all the documentation of the prototype. List current capabilities and potential improvements.
2. Brainstorm upgrades for the robot firmware.
3. Start a design preprogram modes that will provide similar interactivity as the ones from the Thymio 2 robot.
4. The initial implementations will be evaluated with the LEARN Center and MOBOTS Lab community.
5. Expand the initial brainstorming for the creation of functionalities and behaviours with a focus on interactivity. Documentation of the ideas will be stored for future development and educational content creation.
6. Focus on the most interesting and feasible ideas, and start the design of the graphic interface. The result should be a web-based application that connects to the Sthymuli board and provides programming capabilities to interact with all preselected modules.
7. (Optional) Apply for Ethics Approval to be able to interview or run surveys with a second group of EPFL people and the group of teachers.
8. Run a second round of feedback with people from outside the Lab. With the feedback acquired and the documentation of the modules, iterate and improve the implementation.
9. Run a final evaluation of the modules with the group of teachers.
10. Write the MP report and design the presentation.
11. (Optional) Run basic data analysis to the executed surveys and plan a publication in case of relevant results.

Methodology:
This MP follows an iterative design methodology and schedule. The idea is to be very sensitive to the imputs coming from the interaction with the surroundings of the project (discussions, surveys, chats, events...) at the same time as we solve technical issues. The creative work will be a big part of the project development.

Work Plan:
Based on the EPFL timeline, we will have weekly meetings and the student will have access to a desk to work.

Expected Results:
As the final result of this project we would have to produce a functional upgraded Sthymuli along with a set of modules, **a graphic interface** and a well documented User Guide.

Resources:
MOBOTS LAB will provide this project with all the resources needed to carry it out.

Contact:
Manuel Bernal Lecina: manuel.bernallecina@epfl.ch

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Manuel BL

MOBOTS LAB
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