



Semester Long Internship Report

On

Creating Spoken Tutorials for Scilab

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Chapter 1

Introduction

The Spoken Tutorial Project is about teaching and learning a particular FOSS (Free and Open Source Software) like Linux, Scilab, LaTeX, PHP MySQL, Java, C/C++, LibreOffice etc. via an easy Video tool. It is a multi-award winning educational content portal. Here one can learn various Free and Open Source Software all by oneself. It's self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning, can learn from any place, at any time and in a language of their choice. Students, Staff Teachers from Schools, Colleges, Universities, Polytechnics, ITIs, Skill centers, NGOs all can avail the training at very low cost.

The method is Active learning on Computer systems and very suited for Remote/Distance Education. Teachers students can master the software courses on their own, in their own campus and at their own time. Once one gets started any student or faculty can master the Software Course and also get Certificates. UG, PG or Research scholar students and even teachers of Science, IT, Engineering, Commerce, Management, MCA disciplines can learn any of the FOSS.

Today, SMEs and Govt. departments are moving to Open Source Software like Linux OS. Students with this knowledge will have an edge in the job market. They can also become entrepreneurs and use Open Source Software in their businesses, and save money vs., if they were using commercial software.

IIT Bombay Spoken Tutorials now offers Partnership opportunity to Computer Institutes/Centres to give their learners a range of 75+ relevant Basic and Specialized Courses. These cover General IT skills, Programming, Web development, Multimedia, Mathematics, Sciences, Industrial process simulation packages and many more. Institutes can train unlimited students in many courses along with Certificates.

IIT Bombay is leading the effort to popularise Scilab in India and Graphic user interface (GUI) is one of the best features of Scilab. This effort is part of the Free and Open source Software for Science and Engineering Education (FOSSEE) project, supported by the National Mission on Education through ICT of the Ministry of Education.

IIT Bombay is using Spoken Tutorials (<http://spoken-tutorial.org>) to create learning material for FOSS. This is the main page for the organisation of the scripts required for Scilab spoken tutorials. We invite the Scilab user community to participate in this activity.

Overall coordination for the series was done by Rashmi Patankar from FOSSEE project, IIT Bombay. Nancy Varkey and Rani from Spoken Tutorial project, IIT Bombay, were the reviewers from ST end.

Chapter 2

Tutorials on GUI in Scilab

Graphic User Interface (GUI) in Scilab allows user to operate the software programmes with a point-and-click interface, eliminating the need for others to learn a language or type commands in order to run the programme. The GUI components include menus, toolbars, push buttons, radio buttons, list boxes, sliders, etc. In SCILAB, a GUI can be used to display data in tabular form or as plots.

Scilab offers multiple options for developing a GUI. Among all the GUI approaches, the GUI Builder toolbox is the most extensively used. With this toolbox, creating a GUI is very simple. This toolbox is developed by Tan Chin Luh and David Violeu. This is the fastest and easiest way to create the GUI in Scilab.

This series shows how to make a Graphic user interface (GUI) from scratch and with the GUI Builder toolbox.

2.1 GUI Builder Toolbox

- Learn about GUI Builder Toolbox,
- Install GUI Builder Toolbox,
- About GUIBuilder Palette,
- Adding a pushbutton,
- What is Tag and String,
- Adding a Pushbutton to a GUI using GUIBuilder Palette,
- How to auto-generate a Scilab code using this toolbox,
- Write a callback function for the Pushbutton,
- Generate a static response on the Scilab console.

2.2 Printing User Input

- About an Edit box,
- About a Text box,
- How to open an existing GUI,
- Adding Tag and String,
- Adding an Edit box to GUI,
- Adding a Text box to GUI,
- About string command,
- Auto-generate Scilab code using this toolbox
- Write a code to print the user input on GUI,
- Importance of adding `.string` after the handle.

2.3 Object properties and Alignment

- How to change the Background color,
- How to change the Font angle of the string,
- How to change the Font size of the string,
- How to change the Font weight of the string,
- How to change the Foreground color,
- How to change the Horizontal Alignment of the string,
- How to change the String value,
- How to shift the object using direction keys,
- How to move object using 'Move' button,
- How to change the width and height of an object,
- How to delete an object,
- How to change the alignment of an object,
- How to make all the objects of same size,
- How to maintain all the objects equally spaced.

2.4 Graph a linear equation

- About Linear equation of a line,
- What are Axes,
- Use of Edit box for taking user input for a, b and c,
- Use of Text box for displaying the slope and y-intercept,
- Use of Pushbutton to plot the response of a Linear Equation,
- Use of Axes to plot an equation of line,
- Writing Tag and String for all the objects,
- Auto-generate a Scilab code using GUI Builder toolbox,
- Write a callback function,
- Use of strtod command,
- Use of xgrid command,
- Test the GUI.

Chapter 3

Recordings

During the period of my semester internship, I have made the script, slides and done the recording for the following 4 tutorials from GUI series:

- Installation of GUI Builder Toolbox.
Video - <https://drive.google.com/file/d/1Cj90zYQ8Bi1Hewuo7MVQQpXiFBluT2/view?usp=sharing>
Script - <https://docs.google.com/document/d/1iJKIkeCu0hSNmX7nanuFryT6mHkc-w2IAOoMunyq7M/edit?usp=sharing>
- Creating a GUI to print the user input.
Video - <https://drive.google.com/file/d/1tiHFDEK-S4aBoAN6F4qI3yDuMHXgSwUk/view?usp=sharing>
Script - <https://docs.google.com/document/d/1WfmJA0bu5i8eWy0kPj3Uo7EkNjokp5DKqtnZAY8Xqt4/edit?usp=sharing>
- Object properties and alignment in GUI.
Video - <https://drive.google.com/file/d/1GhJxupTT8GC1KI6T8BTIzUNHHyPSPgsp/view?usp=sharing>
Script - <https://docs.google.com/document/d/1ATwg-lE4e-DX1f4vVIGCMiUII7i6O8ofNOMBG2KbkfU/edit?usp=sharing>
- Building GUI to graph a linear equation.
Video - <https://drive.google.com/file/d/19C1yzAWFvQIxLnzdNJVeXFyVh0TkBLq4/view?usp=sharing>
Script - <https://docs.google.com/document/d/1MGHfZkkq080lchrI84vCe6mKh3j7vquLdRLnj5DDZN8/edit?usp=sharing>

Chapter 4

Novice Check

During the period of my semester internship, I have performed the novice check of and given my inputs for 5 tutorials. Those are:

- Xcos series:
 - Interactive Simulation in Xcos using slider.
 - User defined variables in Xcos.
- FOT series:
 - Linear programming using linprog function.
 - Bounded Optimization using fminbnd and intfminbnd function.
 - Constrained Optimization using fmincon and intfmincon function.

Since I was working on the GUI series, I was fresh to the concepts of Xcos and FOT series, and this would replicate a situation where in a viewer new to the topic is going to follow the tutorial.

Once the slides and script for the tutorial were finalized, they were sent to me along with any code files required in the tutorial.

My task was to read the script and follow the instructions in it row by row and also check for the script to be complaint to the rules of check-list pdf.

While doing the novice, recording the screen helped the author of the script understand if there was any issue or long pauses during the novice check due to any ambiguity.

Any comments on the scripts were to be mentioned in the google document to be conveyed to the author and then reviewed after the changes were made by them, to check if the issue has been solved.

Chapter 5

Learnings

Learnings from this experience:

- Open-Source Software Training (Scilab)
 - How to install GUI Builder Toolbox in Scilab
 - Creating a GUI
 - Object properties and alignment
 - Plotting a linear equation in GUI
 - FOSSEE Optimization Toolbox (FOT) Testing.
- Recording a Spoken Tutorial using CamStudio.
- Using LaTeX to create presentations and documents.
- Official Etiquette and Professionalism
 - This is the most important quality that we get to learn by experience in the corporate world.
 - The manners and professional greeting styles are not learned in classroom but by observing people who are working in the corporate world successfully.

Chapter 6

Challenges

Challenges that I faced during the internship were:

- Getting my first script right according to the ST norms.
- How to explain the process of placing a Pushbutton on GUI.
- Understanding how a Novice check should be done and what all should be pointed out.
- Recording a proper video.
- Maintaining a work log for daily tasks.

Chapter 7

Conclusion

On the whole, this internship has been an useful experience. I have gained knowledge and skills. I was able to achieved my learning goals. I learned the different aspects of working to Create a Spoken Tutorial. Furthermore I experienced that it is of importance that the education is objective and that you have to be aware of the view of other people. This helped me to define what skills and knowledge I have to improve in the coming time.

The professional and technical skills I acquired from this internship will certainly help me in my future works. I feel much more confidence in myself, and now I look forward to facing the upcoming challenges of the world. I hope this experience will surely help me in my future. At last this internship has given me new insights and motivation to pursue my career.

Chapter 8

Reference

- <https://spoken-tutorial.org/#>
- <https://www.scilab.org/>
- <https://atoms.scilab.org/toolboxes/guibuilder/4.2.1>
- <https://atoms.scilab.org/toolboxes/FOT/0.4.1>

Thank you