



FOSSEE Summer Fellowship Report

On

Creating Spoken Tutorials on Osdag

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Contents

1	Overview	3
2	Spoken Tutorial	4
2.1	Spoken Tutorial Project	4
2.1.1	Process of creating a Spoken Tutorial	4
3	Osdag	6
3.1	Osdag Spoken Tutorials	6
4	Contributions	7
4.1	Creating Spoken Tutorials for Osdag Series	7
4.1.1	Introduction to Osdag	7
4.1.2	Performing an optimum design in Osdag	8
4.1.3	Performing a design check in Osdag	8
4.1.4	Save and Import input values in Osdag	8
4.1.5	Handling unsafe designs in Osdag	8
4.1.6	Design report in Osdag	9
5	Professional outcomes	10
6	Challenges	11
7	Conclusion	12
8	Useful Links	13
8.1	Osdag Spoken Tutorials	13
8.2	Reference	14

Chapter 1

Overview

Spoken Tutorial and FOSSEE (Free/Libre and Open Source Software for Education) are projects at Indian Institute of Technology Bombay. They aim to promote the use of open source tools throughout India and reduce the use of proprietary software.

During my two month fellowship, I was tasked to create tutorials on Osdag. I was able to contribute 6 tutorials to the Osdag series. To create these tutorials, I performed various roles like exploring the Osdag software, writing scripts, preparing slides, novice review, etc.

It was an incredible learning opportunity which I have detailed in this report. I have started with describing the Spoken Tutorial project and its process. I have also mentioned the tutorials I have worked on. After that, there is a detailed account of my contributions. Finally, I conclude the entire experience.

Chapter 2

Spoken Tutorial

2.1 Spoken Tutorial Project

Spoken Tutorial is a multi-award winning educational content portal. It provides numerous different resources on free as well as open source software so that any user can learn them at their own convenience. It also provides the freedom to choose from multiple languages. According to their expertise, a learner can choose from courses ranging from Beginner to Advanced level. To ensure the active participation of the learner, the tutorials include side by side practice as well. The Spoken Tutorial project is funded by the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India. In these times where digital learning has become increasingly popular, initiatives like the Spoken Tutorial Project are of vital importance.

2.1.1 Process of creating a Spoken Tutorial

- **Outline:**
An outline for the topic is created to help us get a basic understanding of the subject and to give some idea about the structure and sequence of the overall tutorial.
- **Script:**
A script is the written form of the spoken tutorial. Each sentence said during the recording is according to the script. This is made according to the guidelines by the ST team. For a good spoken tutorial, the script needs to be simple with appropriate visual cues.
- **Slides:**
Slides are made to help explain certain topics in the script. They are made corresponding to the script. LaTeX Beamer environment is used to create the slides. For a specific FOSS, templates are used to make the slides. These slides should follow the guidelines given by the ST team.
- **Novice check:**
Novice check is done by a person who has a very little knowledge about the

ST to make sure that the script and slides are easy to understand. The novice also points out mistakes made in the script and slides.

- **Recording:**

The video is made according to the ST guidelines. Extra care is taken to minimize mistakes and ensure the proper quality of recording.

- **Review:**

After the above steps, all the related files are sent to the reviewer who verifies the recording and files according to the spoken tutorial guidelines and checklist. This is to ensure a good quality of the content being uploaded. Once all the criteria is met, the reviewer publishes the tutorial on the spoken-tutorial website.

Chapter 3

Osdag

3.1 Osdag Spoken Tutorials

Osdag is a cross-platform free/libre and open-source software for the design (and detailing) of steel structures, following the Indian Standard IS 800:2007. It allows the user to design steel connections, members and systems using a graphical user interface. The interactive GUI provides a 3D visualisation of the designed component and an option to export the CAD model to any drafting software for the creation of construction/fabrication drawings. The design is typically optimised following industry best practices.

Osdag is primarily built upon Python and other Python-based FLOSS tools, such as, PyQt, OpenCascade, PythonOCC, and svgwrite. It uses SQLite for managing steel section databases.

This series shows how to use Osdag and perform steel design with the help of Osdag and it's resources.

I have explored 6 different tutorials, their teaching resources and the teacher-submitted activities to learn more about them. It gave me a better grasp of the interface and how to explain the topics in a tutorial. I have described them in detail in the next section.

Chapter 4

Contributions

4.1 Creating Spoken Tutorials for Osdag Series

- Introduction to Osdag
- Performing an optimum design in Osdag
- Performing a design check in Osdag
- Save and Import input values in Osdag
- Handling unsafe designs in Osdag
- Design report in Osdag

4.1.1 Introduction to Osdag

This tutorial explains various components of Osdag. Under the current version of Osdag, the Connection Member and Tension Member modules are developed and can be practiced. Under each module there are sub-modules also.

The GUI of Osdag consists of four main parts: In left side there is an **input dock**, in this dock user can give input for their design. On the right hand side there is an **output dock**, this becomes active on a successful creation of a steel section design. On the top center there is a **CAD window** showing CAD model on successful design and below the CAD window there is a **Log message** box which signifies the status of design if it is a safe design or an unsafe design with mentioned errors and warnings.

After understanding the basics of Osdag, I wrote the script and made the slides for this tutorial. Further it was checked by my mentor and a novice, and then recorded.

4.1.2 Performing an optimum design in Osdag

This tutorial explains difference between an optimum design and design check, also this processes upto explaining how to perform an optimum design and reviewing its result.

There are two ways for performing a design. The first is to design with most **optimum inputs** and the second is to design with **customized inputs**.

After creation of an optimum design, I wrote the script and made the slides for this tutorial. Futher it was checked by my mentor and a novice, and then recorded.

4.1.3 Performing a design check in Osdag

This tutorial explains how to perform a design check, Interpret log messages, rectifying unsafe design using these log messages and how to arrive at a safe design.

This tutorial demonstrated scenario 2 design with customized inputs.

After creation of design with customized inputs, I wrote the script and made the slides for this tutorial. Further it was checked by my mentor and a novice, and then recorded.

4.1.4 Save and Import input values in Osdag

This tutorial explains how to save input values as a text file and import back it to osdag to perform designs.

From the file menu by clicking on save input we can save our filled input data as a text file with file extension OSI. On selecting the desired file from load input option we can have automatically filled input dock.

After experiencing filling, saving and loading input back, I wrote the script and made the slides for this tutorial. After it was checked by my mentor and a novice, and then recorded.

4.1.5 Handling unsafe designs in Osdag

This tutorial explains how to inpterpret log messages. What are errors, warnings and information? and finally how to rectify our design using them.

When a design is unsafe log message window suggest some warnings where the section is failed to hold the applied load. Warnings suggests the specific value of load upto which design is safe. It also suggest the other parameter range that needs to adjust if we doesn't want to change the value of load.

After experimenting various input values error and warnings, I wrote the script and made the slides for this tutorial. After it was checked by my mentor and a novice, and then recorded.

4.1.6 Design report in Osdag

This tutorial concentrates about design report of a successful design which helps us to know each parameter in detail.

For making a design report we need to make a designer's profile. In design report there is a header containing information provided in designer's profile repeating on every page. Otherwise, design report has four main parts:

- **Input Parameters:** It contains information which was filled in input dock.
- **Design Checks:** This part consists of all the calculation defining capacity of member and its sections.
- **3D Views:** It consists of 2D and 3D view of model.
- **Design Log:** It gives information about reverse loading and more efficient design.

After creating and analysis of Design report, I wrote the script and made the slides for this tutorial. After it was checked by my mentor and a novice, and then recorded.

Chapter 5

Professional outcomes

Professional skills developed during this internship are:

- Steel section designing
- Workplace communication skills
- Time management
- Team work with fellow interns
- Creating work reports and presentations using LaTeX

Chapter 6

Challenges

Challenges that I faced during the fellowship:

- Getting my first script right according to the ST norms.
- To fill customize option in input text boxes.
- Manage time and submit work within time limits.
- Adjust slides with latex according to desire.
- 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

Useful Links

8.1 Osdag Spoken Tutorials

- **Introduction to Osdag.**
Script-
[Introduction to Osdag](#)
Slides-
[Introduction to Osdag](#)
- **Performing an optimum design in Osdag**
Script-
[Performing an optimum design in Osdag](#)
Slides-
[Performing an optimum design in Osdag](#)
- **Performing a design check in Osdag**
Script-
[Performing a design check in Osdag](#)
Slides-
[Performing a design check in Osdag](#)
- **Save and Import input values in Osdag**
Script-
[Save and Import input values in Osdag](#)
Slides-
[Save and Import input values in Osdag](#)

- **Handling unsafe designs in Osdag**

Script-

[Handling unsafe designs in Osdag](#)

Slides-

[Handling unsafe designs in Osdag](#)

- **Design report in Osdag**

Script-

[Design report in Osdag](#)

Slides-

[Design report in Osdag](#)

8.2 Reference

- <http://www.spoken-tutorial.org/>
- <https://osdag.fossee.in/>
- <https://osdag.fossee.in/resources/downloads>
- <https://osdag.fossee.in/resources/videos>