

Scilab: Resources and Opportunities

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Outline

1. Introduction
2. Scilab Spoken Tutorials
3. Textbook Companions (TBC)
4. Lab Migration
5. FOSSEE Scilab Toolboxes
6. In progress: Xcos on Cloud
7. Forums to answer questions
8. Scilab runs on many systems
9. Overview of FOSSEE



1. Introduction



FOSS: Free and Open Source Software



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Makes small companies uncompetitive



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Makes small companies uncompetitive

There is no alternative to FOSS



Why FOSS?

- It is free of cost



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- ▶ It is affordable to industry
- ▶ It allows learners to become better programmers (like auto mechanics)
- ▶ It can grow through collaborative contribution - explained shortly
- ▶ Use proprietary software only when absolutely necessary



Problems with open source software

- ▶ **Good documents are missing**
- ▶ **Lack of support**
- ▶ **Wrong impression about the quality**



Problems with open source software

- ▶ **Good documents are missing**
 - ▶ **Spoken Tutorial**
 - ▶ **Textbook Companion**
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Scilab:

A FOSS Alternative to Matlab

- ▶ **Scilab is an excellent open source software**



Scilab



- ▶ **Free and open source Software**
- ▶ **A good substitute for Matlab**
- ▶ **About 95% compatibility**
- ▶ **Xcos is a good alternative to Simulink**



- ▶ **Excellent computational environment**
- ▶ **LINPACK, EISPACK, LAPACK**
- ▶ **Also, DASSL, ODEPACK, etc.**



How reliable is Scilab?

- ▶ **CNES: Arienne rockets**
- ▶ **Recent GSAT-16 Launch by Ariane**
- ▶ **CNES relies on Scilab for many critical calculations:
trajectory, flight dynamics, orbit**
- ▶ **Talk by T Martin of CNES on Scilab**



Few more examples of Scilab use

- **Few more industrial applications of Scilab**



A brief demo of Scilab

- ▶ **Matrix calculation**



A brief demo of Scilab

- ▶ **Matrix calculation**
- ▶ **A plot**



A brief demo of Scilab

- ▶ **Matrix calculation**
- ▶ **A plot**
- ▶ **Demo**



Open source software: Main problem, a solution

- ▶ **Good documents are missing**
- ▶ **A solution: Spoken Tutorial**



2. Spoken Tutorial



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- ▶ 10 minute long, audio-video tutorial



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- ▶ Released under CC-BY-SA



Scilab Spoken Tutorials

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- ▶ **Dubbing available in all our 22 languages**



Spoken Tutorials are MOOCs

- ▶ **Many universities use Spoken Tutorials as MOOCs**



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- ▶ [See a list here](#)



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- ▶ [See a list here](#)
- ▶ The Spoken Tutorial team provides certificates based on an online test



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- ▶ Many universities use Spoken Tutorials as MOOCs
- ▶ [See a list here](#)
- ▶ The Spoken Tutorial team provides certificates based on an online test
- ▶ At affordable prices



Open source software:

Main problem, another solution

- ▶ **Good documents are missing**
- ▶ **Second solution:**
Textbook Companion (TBC)



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- ▶ **1 book \Rightarrow 1 TBC**
- ▶ **We pay Rs. 12,000/TBC honorarium**

Extent of Scilab TBC

- ▶ 1,000 college students and faculty contributed
- ▶ 600 textbooks
- ▶ 70,000 examples coded



Download TBC for Offline Use

- ▶ <https://scilab.in/>



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Demo of Scilab Cloud on GARUDA

<http://cloud.scilab.in/>



Extent of use

- ▶ **As a documentation**



Extent of use

- ▶ **As a documentation**
- ▶ **What if studies in courses**



Extent of use

- ▶ **As a documentation**
- ▶ **What if studies in courses**
- ▶ **Useful to 99% of 40 lakh engineering students a year**



Code Search to Locate Syntax

- ▶ http://scilab.in/tbc_solr_search
- ▶ To set problems - useful to faculty



4. Lab Migration



4. Lab Migration

- ▶ Do you want to migrate your lab to Scilab?
- ▶ We will help you
- ▶ State your lab experiments
- ▶ You code them in Scilab: we will give honorarium and a certificate
- ▶ Or we can get them coded by Scilab experts from colleges



Completed Labs

**60 labs are already migrated -
25 in progress**



Join us to Migrate Labs to Scilab

- ▶ **Migrate your labs**
- ▶ **Help others migrate their labs**



5. We are improving Scilab Toolboxes



5. We are improving Scilab Toolboxes

- ▶ **Calling Octave**
- ▶ **Optimization**
- ▶ **Signal processing**
- ▶ **Image processing**
- ▶ **Control systems**
- ▶ **Identification**

Scilab to C



Toolboxes Availability

- **Available as Scilab Atoms**



Toolboxes Availability

- ▶ Available as Scilab Atoms
- ▶ **Optimization toolbox already released**



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- ▶ Other toolboxes to be released shortly



Toolboxes Availability

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- ▶ Code is available here



Scilab Toolboxes IEEE Paper

Shamika Mohanan, Inderpreet Arora and Kannan Moudgalya, [Developing Scilab Toolboxes, A Multi-FOSS Approach](#), IEEE Proceedings of Indian Control Conference, pp. 176-181, 4-6 January 2017, IIT Guwahati.



We want your participation

To add more functions to Scilab toolboxes



6. In Progress: Xcos on Cloud



6. In Progress: Xcos on Cloud

- ▶ **Xcos on cloud**
- ▶ **Help us improve it**



7. Scilab Forums

- **For general doubts**



7. Scilab Forums

- ▶ For general doubts
- ▶ **FOSSEE Forum**



7. Scilab Forums

- ▶ For general doubts
- ▶ **FOSSEE Forum**
- ▶ For doubts on Spoken Tutorials



7. Scilab Forums

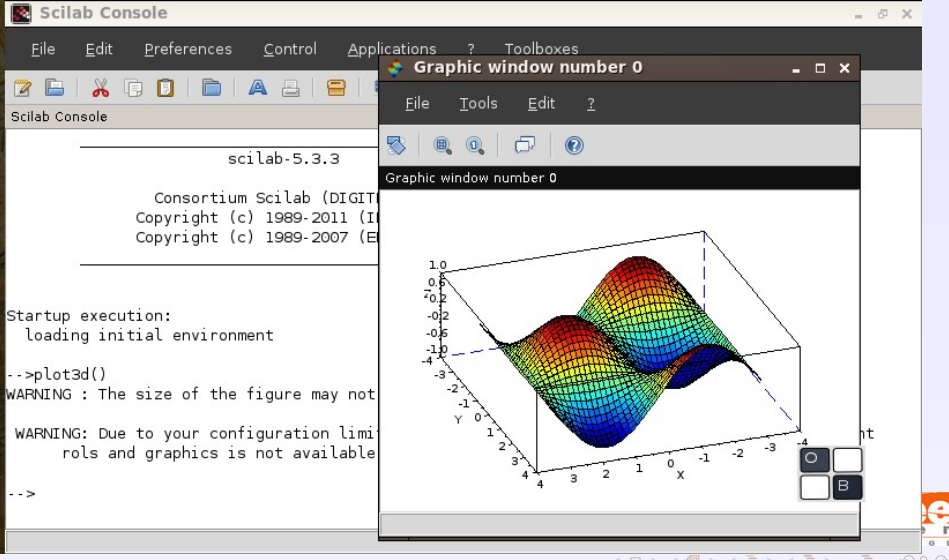
- ▶ For general doubts
- ▶ **FOSSEE Forum**
- ▶ For doubts on Spoken Tutorials
- ▶ **Spoken Tutorial Forum**



8. Scilab runs on many systems



Scilab on ₹2,263 Aakash



The screenshot displays the Scilab 5.3.3 software interface. On the left, the Scilab Console window shows the startup sequence, including the version number and copyright information. The main window, titled 'Graphic window number 0', displays a 3D surface plot of a function. The plot is a mesh surface with a color gradient from blue to red, showing two prominent peaks. The axes are labeled X, Y, and Z, with ranges from -4 to 4 for X and Y, and -1.0 to 1.0 for Z. The console window contains the following text:

```
scilab-5.3.3

Consortium Scilab (DIGIT)
Copyright (c) 1989-2011 (I
Copyright (c) 1989-2007 (E

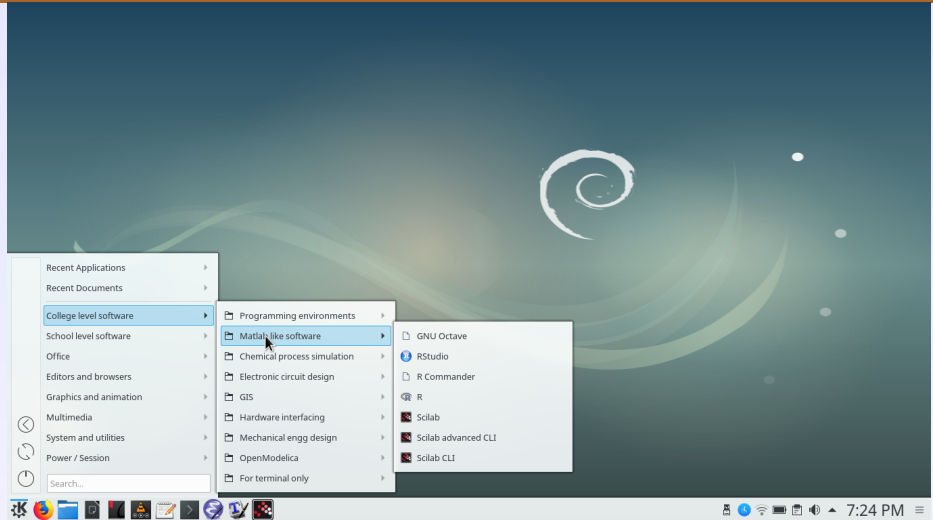
Startup execution:
  loading initial environment

-->plot3d()
WARNING : The size of the figure may not
WARNING: Due to your configuration limit
rols and graphics is not available

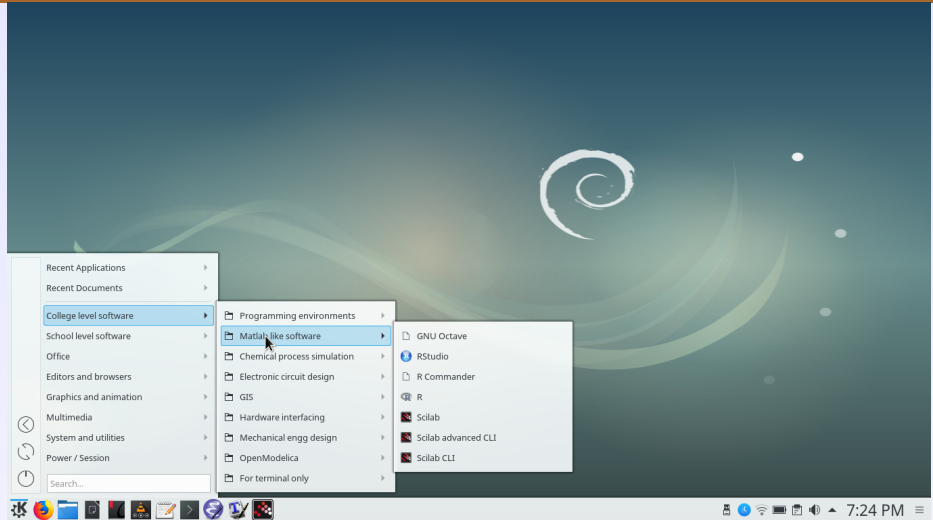
-->
```

The 3D plot shows a surface with two peaks, one at approximately (1, 1) and another at approximately (-1, -1). The surface is colored with a gradient from blue at the base to red at the peaks. The axes are labeled X, Y, and Z, with ranges from -4 to 4 for X and Y, and -1.0 to 1.0 for Z.

Scilab on our ₹10,000 Laptop



Scilab on our ₹10,000 Laptop



In market now

More on ₹10,000 Laptop

- ▶ **My LinkedIn Post**
- ▶ **The website of our laptop**



9. FOSSEE

Free and Open Source Software for Education



9. FOSSEE

Free and Open Source Software for Education

- ▶ We promote FOSS in a big way
- ▶ <https://fossee.in>
- ▶ We promote many other FOSS also



Conclusions



Conclusions

► Learn Scilab



Conclusions

- ▶ **Learn Scilab**
- ▶ **Also contribute to it**



Conclusions

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- ▶ **Visit the websites I have shown**



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- ▶ **Partner with us**



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Funding Support



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- ▶ Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

MHRD, Government of India



Thank you

