Python in Science and Engineering Education in India

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fossee.in
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SciPy 2010
Austin, TX, June 30 – July 1, 2010
Outline

Introduction and Goals

What we’ve done

Looking ahead
Outline

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What we’ve done

Looking ahead
National Mission on Education through ICT

MHRD

http://www.sakshat.ac.in
$ One billion in three years

- 60% for connectivity
- 40% for content
Some other initiatives

- NPTEL: courses online
- Virtual labs
Open Source mission

Adaptation & deployment of open source simulation packages equivalent to MATLAB, ORCAD etc.

≈ $ 20 million
IIT Bombay’s take

- FOSSEE: Python
- FOSSEE: Scilab \texttt{scilab.in}
- Blender based animations: \texttt{oscar.iitb.ac.in}
FOSSEE

Free Open-source Software for Science and Engineering Education

http://fossee.in
Increase adoption of FOSS tools in the curriculum
Current Focus

- Python
- Scilab
People

- Kannan Moudgalya, Mani Bhushan (CHE) – Scilab
- Madhu Belur (EE) – Scilab
- P S V Natraj (SysCon) – Scilab
- G. Sivakumar (CSE)

- Prabhu Ramachandran (AE) – Python
Details . . .

- Started in May 2009
- Pilot funding (1 yr): $200,000
- 3 years total: $1.7 million
Approach

- Curriculum
  - Design new courses
  - Modify existing courses
- Spread adoption
  - Workshops
  - Conferences
- Community Involvement
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Tasks taken up

- Curriculum
  - Design & prepare course material
- Spread adoption
  - Workshops for Python & Scilab
  - Hosting conferences
- Community Involvement
  - Freely available content
  - Infrastructure for community involvement
Workshops

- Python — 15 Workshops
  Direct beneficiaries — 201 teachers & 567 students, 32 professionals
  Indirect beneficiaries . . .

- Scilab — 9+ Workshops
  Direct beneficiaries — 254 teachers & 230 students

- Facilitated & funded 3 Faculty development programs

\(^1\text{Jan. 2010}\)
Intro tutorials at SciPy 2010
International Conference on Scientific Computing with Python

December 12-17, Technopark
Thiruvananthapuram, Kerala
Design/Material for SEES course

- Software Engineering for Engineers and Scientists
- Due: end of July
- Linux, Python and computing, \LaTeX, VC . . .
- hg.fossee.in/sttp/
- fossee.in/review
DVD distributions

LivePython 9.08
Fossee.in

Open Source Software Mission

IIT Bombay

DVD Sponsored by
National Mission on Education Through ICT
www.sakshat.ac.in
Conversion of existing courses

- Digital Control – CL 692 (done)
- Distributed Systems – CS 451 (ongoing)
- Matrix Computations – EE 636 (ongoing)
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PyTasks

- Online portal for community involvement
- Credit and cash
Spoken tutorials

spoken-tutorial.org

- Screencasts for FOSS
Certification

- Courses made available online
- Online examination
Conferences

Sage days 25
August 9–12\textsuperscript{th} at IIT, Bombay
in conjunction with ICM

fossee.in/sage_days
Conferences

SciPy.in 2010
December at IIIT, Hyderabad
Getting into the syllabus

- Try and push Python & Scilab into the syllabus in colleges
- Need — Books and Course Material
Getting into the syllabus

- Books at various levels using Python/Scilab
- Books for teaching introductory programming, data structures etc.
- Convert existing books that use other languages into using Python/Scilab
Getting into the syllabus

- Develop spoken tutorials for curricular activities
- Convert the existing workshops to spoken tutorials
- Develop supplementary material to solve problems using Python/Scilab
More courses

Advanced course on Python for scientific computing
Help core projects

SciPy and Sage
Ideas welcome!
We’re really excited about this!
Thank you!