



# Spoken Tutorials - Towards IT Literacy

by Prof. Kannan M. Moudgalya

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**THE SPOKEN TUTORIAL** (ST) project was started at IIT Bombay in 2009 with funding from the National Mission on Education through ICT, MHRD, Government of India. ST is an audio video tutorial developed using the screen-cast methodology and it is typically of about a 10-minute duration<sup>1 2</sup>.

The current objectives of the ST project are:

1. To create documentation for free and open source software (FOSS).
2. To make the ST suitable for self learning.
3. To conduct workshops using ST, providing IT literacy training to a large number of people.
4. To make IT literacy training accessible to students weak in English, without affecting their employment potential.
5. To create STs on the topics of bridging the digital divide.

But first, the name 'Spoken Tutorials' itself. When this work started, there were a large number of silent screen-cast tutorials on the Internet. To distinguish ours from these, we used the word *Spoken*. This word is even more important as we dub the spoken part into all Indian languages. As we do not

capture the face of the person creating the tutorials, it is strictly not a video tutorial. And because one can use STs to learn a topic, we call it a *Tutorial*.

Now let's take a closer look at each of these objectives.



Figure 1. Our staff member Madhukriti supporting a SELF workshop in Kerala through Skype.

<sup>1</sup> K. M. Moudgalya. Spoken Tutorial: A Collaborative and Scalable Education Technology. CSI Communications, 35(6):10–12, September 2011. Available at <http://spoken-tutorial.org/CSI.pdf>.

<sup>2</sup> Spoken Tutorial Project. <http://spoken-tutorial.org/>

**1. ST as a document for FOSS.** Although there are many outstanding FOSS systems, their acceptance is low because of poor documentation required to

understand them. If FOSS is used in a big way, India's reliance on commercial software can come down, resulting in substantial savings to the exchequer. FOSS expertise could help many IT professionals upgrade themselves as entrepreneurs, without much investment. Finally, the ST based learner can simultaneously practice the underlying software, legally, without resorting to piracy. Thus, our approach will help everyone, including those who cannot afford expensive software. In a typical spoken tutorial, there are about one hundred screen transitions. It is a lot more difficult to create an equally effective pdf document.

**2. ST for self learning.** We follow a top down approach: create outlines of the tutorials, write scripts for them and subject them to a novice check, before using them for recording. Only those who pass a test conducted by us are allowed to create STs. These tests

**3. Conducting ST workshops.** As they are created for self learning, one can use a set of spoken tutorials to conduct workshops, even without domain experts. The workshops are conducted by volunteers using a clearly articulated and regimented process. Our staff members join through Skype, mainly for motivation and moral support, as can be seen in Fig. 1. These are called **Spoken tutorial based Education and Learning through Free FOSS Study Workshops or SELF workshops.** Because the learning happens mainly through ST, the quality of SELF workshops remains the same irrespective of what part of the country they are conducted in.

In the last 18 months, *the ST team at IIT Bombay has trained more than 160,000 students* through SELF workshops (see Fig. 2). These workshops have been conducted on different open source software

### Workshop Statistics

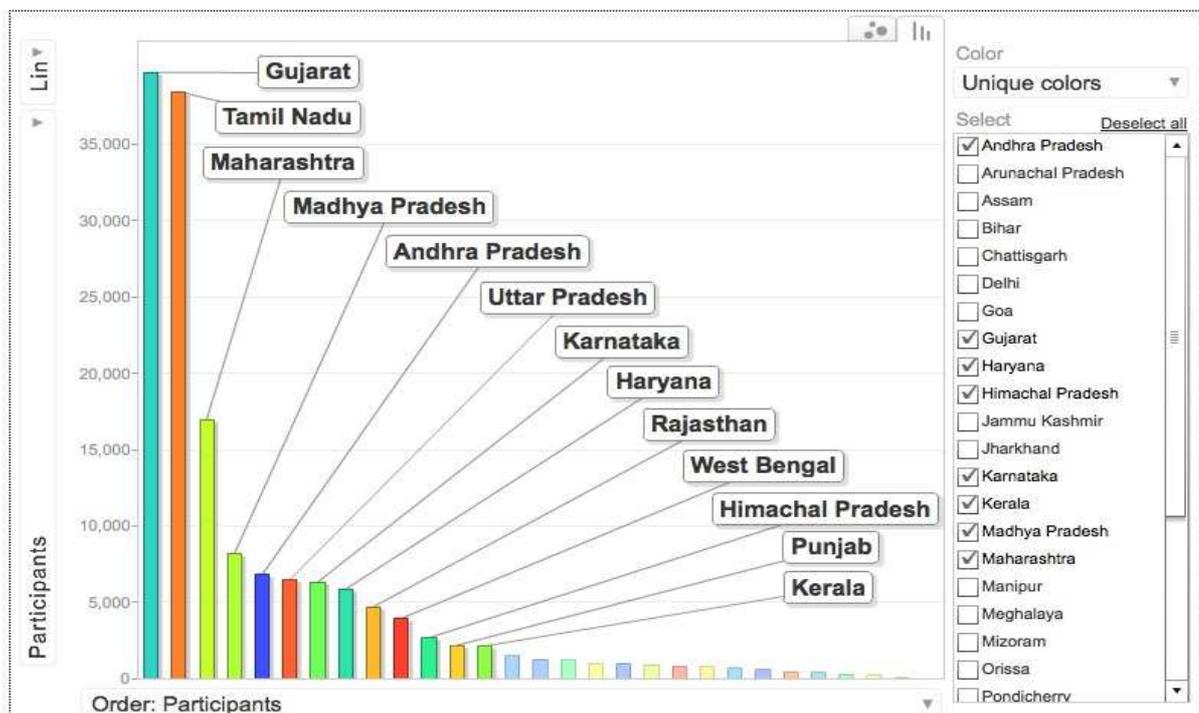


Figure 2. Number of students trained state-wise, during the past 18 months (for states with 2,000 or more students trained).

are similar to the driving tests conducted in the US: multiple choice questions with a high pass mark and a cooling off period of two weeks in case of failures. Finally, we conduct pilot workshops and come up with instruction sheets to make the ST truly suitable for self learning. All files required to practice every tutorial are also provided on our web site <http://spoken-tutorial.org>. On the site, we also provide all the spoken tutorials in the order they should be studied.

technologies, absolutely *free of cost*. Efforts are underway to improve the underperforming states<sup>3</sup>.

We also conduct online tests and give certificates to those who pass the test - again, free of cost. These

<sup>3</sup> Spoken Tutorial Project. Events team contact details. [http://process.spoken-tutorial.org/index.php/Software-Training#Organising\\_Workshops](http://process.spoken-tutorial.org/index.php/Software-Training#Organising_Workshops).

workshops have been conducted in LaTeX, Scilab, PHP, Python, ORCA, Linux, LibreOffice, Blender, Java, C, C++, GIMP, GeoGebra and OpenFOAM. We are in the process of creating spoken tutorials in many more open source software systems.

**4. Non-English literate students.** Dubbing only the audio portion has been done successfully in this project. This is an extremely easy procedure: it requires only about 5% of the effort involved in creating the originals. For students who are weak in English but desirous of using the normal keyboard, this is a godsend: their employment potential is maintained while the learning happens in their mother tongue. This also allows tutorials on high technology topics be made available even to minority linguistic groups, for example, those whose mother tongue is Sanskrit or Bodo. This approach has the benefit of bootstrapping difficult skills in such groups, even if there are no domain experts who speak their language. As dubbing

(192), Marathi (157), Tamil (117) and Bengali (105) being the top five. Hindi, Tamil and Bengali dubbing will be useful to the children in the neighboring countries as well. The 73 tutorials dubbed into Nepali, the official language of Sikkim, will be useful to the students of Nepal also.

Many more tutorials, both original and dubbed, are in various stages of preparation. We have just started offering SELF workshops to school teachers in pilot mode, as there are a lot of differences between schools and colleges, and also because it has taken time to build a substantial number of local language dubbing. Local language dubbing is useful also for polytechnic colleges, which generally get a large number of students from rural areas. The initial response to dubbing is very encouraging.

**5. Bridging the digital divide.** The ST method can effectively be used in all demonstration based subjects

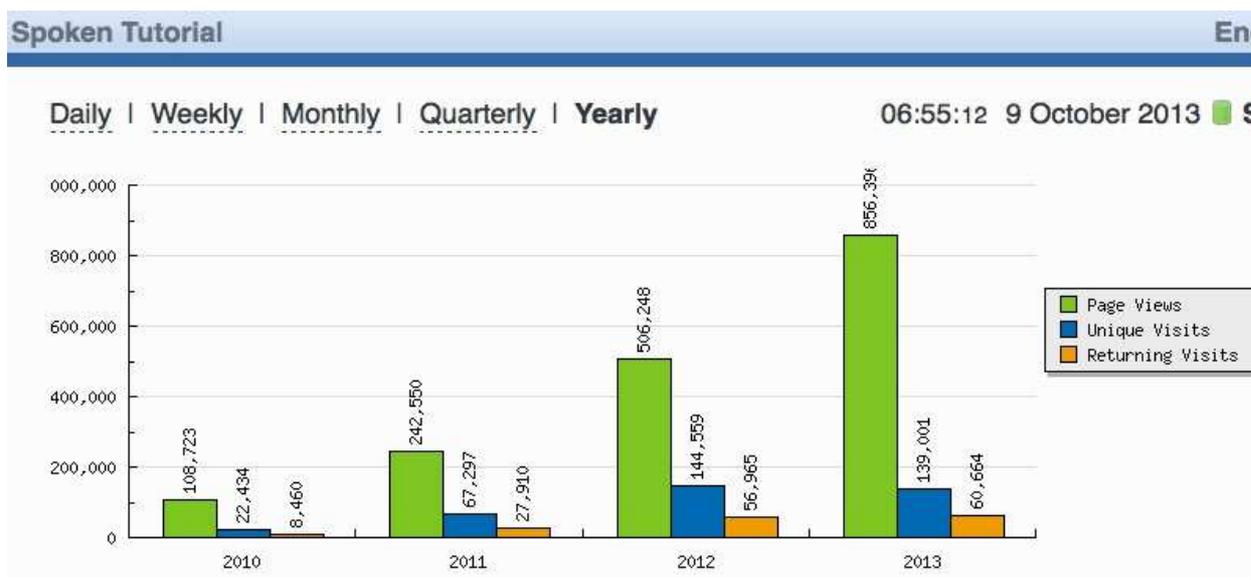


Figure 3: Annual visits to our web site <http://spoken-tutorial.org>, as reported by *Statcounter*. These numbers are an understatement, see [4].

into other languages happen from the same original high quality spoken tutorials, the standard is maintained in all language dubbing. This has good potential to help the poor children of our country, who typically end up in vernacular medium schools without access to good teachers. Finally, dubbing only the audio has the potential to promote national integration.

At the time of writing this article, there are about 450 STs in English. There are also about 1,000 tutorials dubbed into various languages: Gujarati (204), Hindi

[1]. For example, it is useful for skills training, to bridge the digital divide, and to convey health related information. Use of STs to spread knowledge of this type has the potential to make India a developed country. We hope to develop STs in these topics, with organizations that have the domain knowledge and are interested in this approach.

The spoken-tutorial.org website is popular among users: We first present the information given by statcounter.com. The number of page views started at 100,000 in 2010, and has doubled every year. We

expect one million page views this year, possibly in November itself, maintaining the same rate of growth (see Fig. 3). These numbers are an under-representation, as many of the pages in our portal are possibly not monitored. Awstats, into which we registered recently, yields a much larger number. According to this, we are currently clocking about 50,000 unique page views a month, with about 9 minutes as average time spent by a visitor<sup>4</sup>. The comparable figures for Wikipedia are 76,000 unique pages and 21 minutes<sup>5</sup>. It is interesting to note that Wikipedia is the only educational website in the top ten websites of the world, listed in this Guardian article.

The SELF workshops conducted through ST are beginning to payoff. Here are some of the testimonials we received:

*Recently, I came across one company which wanted students with sound knowledge in PHP MySQL. As our MCA syllabus does not cover PHP MySQL, I decided to train my students using Spoken tutorial. More than 30 students took up the course, and in a very short time, I could train my students. This helped place six students, by training them to meet the company requirement, without incurring any cost. The Spoken Tutorial courses are effectively de- signed to train a novice user, without the support of a physical teacher, and have taken care of all possible questions that may arise during a course.*

*- Dr. Chitra Desai, Head, MCA, MIT Aurangabad  
(Head of an MCA department)*

*I am very glad to inform you that I got an opportunity to speak about my experience with IIT Bombay for working on a project (Spoken Tutorials). This exposure seemed to be one of the reason for getting selected in TCS, which various engineers and other graduates would love to. The amazing certificates and having leadership qualities for organizing several workshops during my college days brought in me the confidence to undertake any task. I have got into TCS as a Linux developer. The first time I learned about Linux is when I conducted as well as undertook a test on Linux which was organized by IIT Bombay.*

*- Krishnaveni Nair, B.Sc Graduate, SIES Mumbai*

This from a student:

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<sup>4</sup> Awstats. Analytics provided by awstats on spoken-tutorial.org. <http://spoken-tutorial.org/awstats/awstats.pl?config=www.spoken-tutorial.org>.

<sup>5</sup> The Guardian. US web statistics released for May. <http://www.theguardian.com/news/datablog/2012/jun/22/website-visitor-statistics-nielsen-may-2012-google>.

*I find the OpenFOAM lecture video tutorials very useful... I am a graduate student at Kansas State University. There is no particular resource person for OpenFOAM at our University, so I tried to search over and over through the internet, using you-tube, etc., and I came across your website from thorough digging. Tutorials in Salome are also my interests, as well as Blender, Scilab, and C++. I am already advocating your website! You are really helping out people, especially those who are not knowledgeable with open source programs, which are essentially the trend nowadays due to economic reasons.*

*- Howell Gonzales, Kansas State University*

The Himachal Pradesh University has accepted Spoken Tutorials as an instructional method for their B.Sc. (CS) and B.Sc. (IT) students under a Choice Based Credit System<sup>6</sup>. The HP university has 77 affiliated colleges. The Tamil Nadu Department of Technical Education (DTE) recently trained teachers from 150 polytechnic college teachers on this methodology. They plan to make spoken tutorial based training mandatory for all the about 450 polytechnic colleges in Tamil Nadu<sup>7</sup>. Many universities and DTEs are in various stages of introducing ST based activity in their curriculum. We expect good acceptance from schools as well. For example, the teachers of CBSE, where Python has recently been introduced<sup>8</sup>, can easily be trained using ST.

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<sup>6</sup> HP University. Circular issued to all affiliated colleges. See [http://hpuniv.nic.in/pdf/CBCS/cbcs\\_workshop13.pdf](http://hpuniv.nic.in/pdf/CBCS/cbcs_workshop13.pdf).

<sup>7</sup> Tamil Nadu Dept. of Technical Education. Circular Issued to all Polytechnic Colleges in Tamil Nadu. See <http://tndte.com/spoken%20tutorial.pdf>.

<sup>8</sup> CBSE Board. Computer Science for Class XI. [http://cbseacademic.in/web\\_material/doc/cs/1\\_Computer-Science-Python-Book-Class-XI.pdf](http://cbseacademic.in/web_material/doc/cs/1_Computer-Science-Python-Book-Class-XI.pdf), 2013.

