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WEBSITES FOR COMPUTER SCIENCE EDUCATION

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Abstract

Computer science is a continuously evolving field. In addition to learning theoretical foundations, students of computer science should keep abreast of latest trends and developments in technology happening globally to stay ahead in the field. Though class room learning and peer interaction has no substitute, but online web resources are important learning component to transform a student into a practically skilled engineer. Thousands of websites are available boasting of expert guidance in computer science, but students generally end up wasting precious time browsing irrelevant sites. This paper presents a collection of 15 best websites meant for undergraduate students to use along with traditional college education for overall professional development.

Keywords: Computer science, MOOC, nptel, shodhganga, inflibnet, source forge.

I. Introduction

Computer Science (CS) is still a growing field and technology is changing rapidly unlike other engineering streams. A CS student has to be strong not only in core concepts of computing, but also should be updated about the latest in technology. He should be aware about updates in job trends, new programming tools & concepts, tech news etc. To be a well rounded professional, one should also learn the business side of trade as well as humanities skills. Due to rapid changing trends in computing, things becomes obsolete when reach to students through books. The best way to catch up with the technology is through web resources. The best thing about web resources is that not only they are best, but all free to use. Though classroom learning and peer interaction has no substitute, but students can make use of online resources to get latest updates. Most of the content available in these websites is to enrich knowledge that is not possible to drive from typical classroom environment. In this paper, I will be presenting best 15 websites that can help students build skills needed to succeed in filed of computer science. This paper is meant for typical undergraduate students to enhance their skills, but some of the resources are also helpful for senior and research students.

II. Websites:

The best 15 must visit websites for CS students are listed below. Students may get addicted to these websites, but the time spent is worth the knowledge derived.

1. Khan Academy: The site started as a way to teach simple math to a cousin by founder of this website through videos. Khan Academy [1] is very popular among college goers to learn mathematics and computer science in a simpler way. The site has broken the notion of people that You Tube is for fun stuff only. Beginner level programming is taught in very excellent manner.
2. Wikipedia: Wikipedia is an online encyclopedia [2] edited by people for the people. The site offers simplified content in a number of languages and is being run with the help of number of volunteer editors. Sometimes it is advised to refrain using this site due to people edited site and content hosted anytime can be dubious. But still Wikipedia is used by thousands of people around the world for information access not only in CS, but all fields.
3. You Tube: You Tube is used to share and view videos made by people [3]. Many engineering institutes has recorded their class lectures and uploaded these onto You Tube for public viewing. Professionals and other people can also teach concepts. Anyone can view thousands of videos on any subject. You Tube virtually has thousands of videos on any subject/topic.
4. MIT Open Course ware: MIT has made video lectures recorded from graduate classes open to general public by uploading on a portal [4]. These lectures are openly accessible to all people, not just to campus students. On the pattern of open source software. Many

institutes have started recording their class lectures and posted onto public video sharing websites on this pattern.

5 NPTEL: The National Programme on Technology Enhanced Learning (NPTEL) [5], funded by MHRD, Govt. of India is Indian version of MIT open courseware. Video lectures by IIT Professors are recorded live from class and uploaded on You Tube and special portal for public viewing. These lectures are a hit in India and abroad, as students from NIT's and other engineering colleges have the opportunity to listen the lectures of IIT Professors free of cost.

6 MOOC's: Massive open online course (MOOC) is the latest trend in distance learning and a step ahead of MIT's open courseware. MOOC sites offer online video lectures in a typical classroom type environment. Each MOOC course has start & end dates, peer interaction, course completion certificates, quiz questions etc. Many sites like Coursera [6], Udacity, EdX etc. offer MOOC's in a numbers of subjects free of cost. IIT's have also tied up with EdX to offer a MOOC by IIT professors.

7 Videlectures.net: This site is a collection of mainly Ph.D. level academic talks launched in 2007. It offers a large collection of video lectures that are enriched with slides. Papers presented in many reputed conferences can be accessed online via this site [7].

8 Google Summer of Code: To be a good computer engineer, one needs to learn to apply the theoretical concepts on real life projects. Colleges generally do not provide such an opportunity to students other than exposure to some academic projects. Students can get the experience of working on an industrial open source project by registering on Google Summer of Code [8] under the guidance of mentor from industry. This program runs every summer during holidays and student are also paid stipend to work on the projects.

9 Code Academy: Code Academy is a online interactive website [9] to learn coding in any language typically for a beginner student. Many tutorials are available for Python, Java, PHP, Ruby, as well as markup languages and CSS.

10 Research Gate: RG is a social networking site among verified researchers and scientists [10] to connect with each other, collaborate, ask questions, get feedback, and for sharing and advancing research. This site is quite

popular among academics. Students intends to do research can connect with right adviser on this site and can download research papers.

11 Google Books: Google book is a service from Google Inc. [11] through which millions of full text books and magazines can be searched and browsed online. Google has scanned million of books from public libraries and put them online for limited public preview. Thus copyrights of respective authors and publishers are not violated and one can view the limited text book (although copyrighted) for finding the information. This portal has tremendous benefits for researchers, students, teachers, scholars, and those people who do not access to physical book.

12 Stack Exchange: Stack Exchange is a network of questions and answers on diverse topics [12], each site covering topics in one field. There are Stack Exchanges for math, programming, computer science, stock overflow etc. Get answers to your questions in typical question-answer format, which didn't get answered by your instructor. There is an option to search for questions, give answer, ask questions etc.

13 INFLIBNET: The Information and Library Network (INFLIBNET) Centre of UGC acts as a central catalogue of resources [13] available in different universities across India for resource sharing, information access, research thesis browsing. High quality e-journals are available through inflibnet at subsidized rates to member libraries of this network. IEEE, Elsevier and ACM are good source of publishers to find research papers for INFLIBNET members in engineering domain. Shodhganga, a portal maintained by Inflienet hosts the electronic versions of doctoral thesis submitted by research scholars in all state and central universities across India [14], making the research done accessible worldwide.

14 Open Source Tools: Source forge is a web based source code repository [15] for open source projects. Students can learn about the various open source software available and view the source code. Similarly Github [16] is repository for open source software's which are great to use in life of a developer. Many open source tools are even better to use than their commercial counterparts.

15 Other Useful sites: Sites like wired.com, Slashdot.org, ZDnet.com are great source for technology

news. Torrents and download.com are used to search and download the software and e-books. For senior postgraduate years or research students sites like arXiv.com, DBLP computer science bibliography and Google scholar (scholar.google.com) are best bet.

III. Conclusion:

These websites are absolutely necessary to transform a student completely into a practically skilled engineer. A word of caution is that these sites do not provide hints/answers to homework questions or classroom assignments, but should be used as a tool to learn business and technical skills needed for a successful IT career. Good luck to start your adventurous journey into exciting field of computer science.

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