

**Enhancing Digital Repository of Scholarly Publications at Indian Institute of Technology,  
Bombay (IITB) India**

Mr. MAHENDRA N JADHAV

Central Library,

Indian Institute of Technology Bombay; Mumbai – 400076, India

Email - [jadhavm@iitb.ac.in](mailto:jadhavm@iitb.ac.in)

Ms. NIRANJANA J BAMANE

Central Library,

Indian Institute of Technology Bombay; Mumbai – 400076, India

Email - [bamane@iitb.ac.in](mailto:bamane@iitb.ac.in)

**ABSTRACT**

IITB launched submission of Electronic Theses and Dissertations (ETD) of Masters Dissertations from 1999 and Doctorate Theses from 2000 onwards. This database is the largest in India and comprising of more than 3000 full text records. It has been made available on intranet at URL <http://etd.library.iitb.ac.in>

The Central Library, IITB digitized bibliographic details and abstracts of Ph. D. theses from 1964-1999 and have been merged with data of Masters Dissertations from 1999 and Doctorate theses from 2000 and are made available at URL <http://www.library.iitb.ac.in/~mnj/gSDL/cgi-bin/library>

In-house software for e-submission of ETD has been developed and for retrieval Greenstone Digital Library Software (GSDL) has been used. In order to develop digital repository, the most promising public domain digital library software DSpace has been chosen to provide enhanced Open Archive Initiative (OAI) support and metadata harvesting of ETD and electronic scholarly publications (journal articles and conference proceeding papers).

We may mention here that infrastructure was available at the Institute and this work was not taken up as project, but was taken up as challenging work. DSpace server has been set up and pilot study has been carried out.

The paper focuses on how the pilot study was carried out and our future plan to have OAI compliance, add and make this database available to Indian National Digital Library in Science and Technology (INDEST) consortium members in India and global scholarly community.

**Keywords:** IITB-ETD, Digital repository, ETD,

## 1 INTRODUCTION

Indian Institute of Technology Bombay is an academic and research institution set up in 1958, is a very special institute offering programs of higher learning that are awarding degrees offering research programmes, in engineering, technology and science. IITB accepts consultancy assignments and sponsored projects are of prime importance.

The objectives of the institute are: training, leadership, organize educational programmes, interact with industrial national/international professional bodies, research capabilities and offer consultancy to industry. Guiding philosophy behind these objectives are: acquisition, preservation, dissemination, advancement of knowledge etc. through research both, pure and applied sciences, engineering humanities and social sciences. Reference and computer applications section of the central library plays vital role in achieving these goals of the institute. Thus, we try to maintain current developments at par with the world trends.

We intend to explore the possibilities of unlocking our research output to researchers, academicians etc. We have already digitized many of our activities and presently our interests are towards enhancing digital repository of scholarly publications and make this database available to Indian national digital library in science and technology (INDEST) consortium members in India and global scholarly community. This will significantly enhance visibility of research work being carried.

## 2 OBJECTIVES

Our objectives of this study are:

- To bring all these intellectual work be brought under one umbrella.
- To make OAI-PMH compliant our digital repository.
- Make the IITB digital repository available to the INDEST Consortium members <http://paniit.iitd.ac.in/indest/> (MHRD supported project) is the most ambitious initiative taken so far in the country

## 3 SCHOLARLY PUBLICATIONS AT IITB

Ours, being an academic and research institution, there are 27 departments, centers and interdisciplinary areas where 450 faculties & Project Scientist/Engineers, 1267 research scholars and 1290 Post graduate students are actively involved in research, engineering, humanities and social sciences, management areas. Theses and dissertations, conference/proceeding papers, journal articles books, chapters in the book, patent etc. represent the intellectual output of an academic institution. Lot of literature is generated, out of which journal articles; conference/proceeding papers are produced in large number (8847 in the past ten years) they are presented in **TABLE - 1** for the past ten years.

**TABLE- 1: Statistics of National/International papers of Conference/Proceeding and**

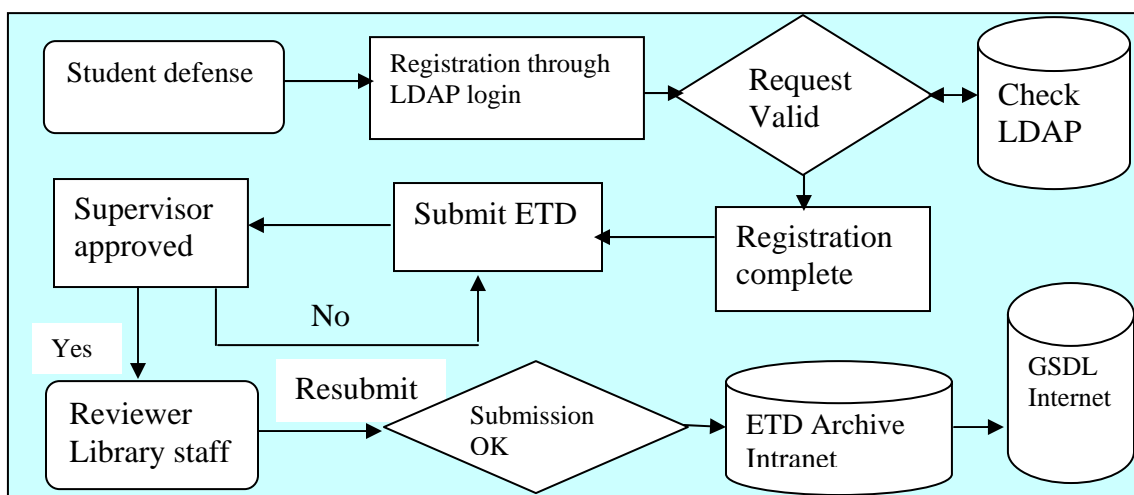
Year	Conference/Proceedings		Journals		Books/Chapter in Books	
	International	National	International	National	Books	Chapter in Books
1995-96	152	154	269	61	11	7
1996-97	125	131	330	134	14	10
1997-98	166	130	305	76	22	10
1998-99	137	110	350	82	18	16
1999-2000	321	61	220	153	18	4
2000-01	351	63	213	109	15	9
2001-02	432	71	242	193	18	13
2002-03	316	255	482	132	20	11
2003-04	422	220	543	115	28	12
2004-05	331	275	512	103	23	46
Total	2753	1470	3466	1158	187	138
Grand Total	<b>4223</b>		<b>4624</b>		<b>325</b>	

**Journal articles by the IITB faculties**

- Data have been collected from Annual Reports of the Institute.

**3.1 Electronic Theses and Dissertations: Submission Process at IITB**

IITB has implemented e-submission of theses and dissertations for masters and doctorate in 1999-2000 that runs parallel to its printed submission of theses and dissertations. We have in-house developed software for e-submission and it is available on INTRANET. After the final defense of students, it is mandatory to submit full text ETD in addition to its printed copy. Consequently, Web server has been set up and maintained at central library at site <http://etd.library.iitb.ac.in>



[Fig.1 ETD@IITB workflow]

The IITB ETD full text database is available on Intranet and we were keen to open the abstract with bibliographic details of entire collection of ETD to public using Green Stone Digital Library Software (GSDL). The Central library digitized abstracts of Ph. D. theses prior to 2000 and the theses submitted electronically online have been merged to form the complete database and have

been housed in ETD as well as Library web server URL  
<http://www.library.iitb.ac.in/~mnj/gsd/cgi-bin/library>

The metadata elements such as **Title, Creator, Subject, Contributor(s), Degree, Department, Language, Degree, Grantor, Date, Format, Identifier, Abstract and Rights** etc. have been selected for display format using **Dublin Core standards**. The entire database of ETD have been made available

We have good number of theses and dissertations produced every year. [These](#) are presented in

Sr. No	Name of Departments	Year wise submissions											
		2001		2002		2003		2004		2005		2006	
		M	D	M	D	M	D	M	D	M	D	M	D
1.	Aerospace Engg.	21		27	1	27	1	28	1	45	1		
2.	Bio-Medical Engg.	10		14	3	11	1	1					
3.	Bio-Technology		1		2								
4.	Chemical Engg.	34	2	53	3	24	2	20	9	42	10		
5.	Chemistry				1	2	5		10		8		3
6.	Civil Engg.	54	8	57	11	48	10	40	7	6	17		1
7.	Computer Sc. & Engg.	45	2	54	1	38		40	4	102			
8.	Corrosion Sc. & Engg.	10		7		15		6	2	14	2		
9.	Earth Science	9	2	10		13	1	12	3	21			1
10.	Electrical Engg.	89	1	119	4	104	13	98	10	136	9	1	3
11.	Energy Systems Engg.	15		20	1	26	2	19	2	26	2		
12.	Env. Sc. & Engg.	1	2	7	3	11	3	11	1	13	2		1
13.	Humanities & Soc. Sc.			10	4	12	3	10	5	12	7		
14.	Industrial Design Centre			15		12		11		17			
15.	Industrial Engg. & Operations Research			11		12		10	3	12	1		1
16.	Industrial Management		1				2		3		1		
17.	Materials Science						2						
18.	Mathematics				2		4		1		4		
19.	Mechanical Engg.	21	3	58	4	63	6	97	3	92	11	11	2
20.	Metallurgical Engg. & Materials Science	21		36	2	39	7	36	3	36	6	1	3
21.	Physics				2		2		6		5		2
22.	Reliability Engg.	1		12	1	11	1	12	1	12	4		
23.	School of Biosciences & Bio Engg.							16	4	22	14	3	3
24.	School of IT			14		19		2			1		
25.	School of Management						5			2	2		3
26.	Systems and Control Engg.			15	2	11	4	15	3	11	6		2
27.	Visual Communication			12		13		12		24		1	
	<b>Total</b>	<b>331</b>	<b>22</b>	<b>551</b>	<b>47</b>	<b>511</b>	<b>74</b>	<b>496</b>	<b>81</b>	<b>645</b>	<b>113</b>	<b>17</b>	<b>25</b>

TABLE - 2 since its inception of e-submission.

**TABLE – 2:** Year-wise on-line submitted dissertations/theses

Grand Total = **2913** (Masters Dissertations – **2551** & Doctorate Theses **362**)

**M-** Masters Dissertations **D-** Doctorate Theses

\* Please note that in the initial stages of submission teething problems were there and some data got corrupted. We have abstract and bibliographic details of **226** data during the years **1999-2000**.

#### **4 SELECTION OF SOFTWARE**

Our in-house developed ETD software does not support the advanced search; standards and protocol like OAI-PMH. After the survey of open source software, DSpace is suitable to setup IITB repository of ETDs, faculty publications, technical reports and other publications of the institute.

Research institutions worldwide use DSpace as an institutional a learning object repository, for records management, and more. The DSpace **open source platform** is freely available so we can customize and extend it to suit our needs. The DSpace **digital repository** system captures, stores, indexes, preserves, and distributes **digital research material**. DSpace accepts all forms of digital materials including text, images, video, and audio files. Possible contents in digital repositories include e-theses, journal articles, technical reports, audio files, etc.

Thus, we will be able to meet variety of digital archiving needs. **Moreover**, INDEST members such as IIT, Delhi; Indian institute of Science, Bangalore etc have implemented Dspace. It is fairly easy to build an institutional repository with Dspace. Planning and implementing stages of DSpace are very well documented. It has strong flexible administrative and security features like e-mail/password based authentication, persistent identifier (handle), it provides advanced and simple search and is compliant OAI-PMH protocol for metadata harvesting.

We may mention here that our focus will be on post submission of ETD, journal articles, conference proceeding papers and other institute publications.

#### **5 PILOT STUDY**

Reference and computer application section of the central library, IITB is concerned with post-submission activity and maintenance of ETD database. Faculties have been consulted regarding inclusion of their publications in the database. This will facilitate archival activity at the institute.

As **regards to** contents of the pilot study, we have selected journal articles + conference/proceeding papers and e-theses and dissertations. The contributors would be faculty and students

Infrastructure was available at the Institute and this work was not taken up as project, but was taken up as challenging work. DSpace server has been set up to carry out pilot study.

Marketing of service is policy matter and yet to be decided.

For pilot study, we have chosen faculty publications (journal articles + conference/proceeding papers) and e-theses of different departments under communities and collections.

The data have been randomly selected from on-line submitted dissertations/theses and journal articles + conference/proceeding papers. The faculty had given their agreed to add soft copies of their papers wherever they are available on e-resources of our website. As per information provided by SHERPA/RoMEO Publisher Copyright policies and self archiving which ever for publications are there on the site will be added to our digital repository. At present our database

comprises of on-line submitted disseminations/theses and journal articles and conference proceeding papers. Pilot study was successfully carried out

## 6 FUTURE PLANS

The INDEST Consortium is the most ambitious initiative taken so far in the country. The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions (IITs, IIM, IISC NITs) in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions. 99 engineering colleges and institutions have already joined the consortium on their own.

New initiatives of INDEST consortia under 'INDEST extended' proposition included e-submission of thesis and dissertation, union catalogue of books, e-print archives etc. IIT Delhi, headquarters of the INDEST Consortia is in the process of setting up cross-archiving and meta-data harvesting services across all INDEST member institutions.

Under such circumstances, it would be of great help to research community if we provide access to our scholarly publications to all INDEST member institutions under the INDEST Consortia by seeking the help of DSpace Federation.

## 7 CONCLUSIONS

We have successfully carried out pilot study of enhancing digital repository of scholarly publications using Dspace open source software. Scholarly publications include journal articles, conference/proceeding papers and e-theses/dissertations. The issue of copyright is under consideration and senate decision is awaited. We aim to add our database in INDEST consortia and make it available to all INDEST member institutions and global community.

## 8 ACKNOWLEDGMENT

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## Curriculum Vitae

**Mr. Mahendra N. Jadhav**, joined Central Library IIT-Bombay as an Assistant Librarian in April 1998. He is currently heading the Computer Applications and Reference Section in the Central Library. As head of the Computer Applications, Mr. Jadhav is **webmaster of Central Library Website** and also looks after the maintenance of computers and servers in the Library. He also takes care of online submission of Electronic Theses and Dissertations (ETD) at the IIT Bombay since 1999. Besides maintaining ETD server and datasets, Mr. Jadhav also helps students in their online submission. His major contribution to the Library at IIT Bombay include maintenance of PCs and Servers in the Library, online submission of Electronic Theses and Dissertations (ETD) and scanning of all abstracts of Ph.D. Theses submitted to IIT-Bombay and making them available online on ETD Web site. He has good number of publications.

### Educational Qualifications

B.Sc. (Biological Sciences), M.Sc. (Biochemistry), B. Lib.Sc., M.L.I.Sc. He has qualified UGC's National Eligibility Test (NET) of Library and Information Science. He has also qualified Certificate course in Computing (IGNOU) and Diploma in Journalism and Mass Communication.

### Research Interests

His current research interest includes digital libraries, ETD, building in-house databases, Web-based learning and educations and creation of library Websites.

### Memberships and Professional Achievements

Mr. Jadhav is a life member of BOSLA, IASLIC and SIS

### Mr. Mahendra N. Jadhav

Assistant Librarian  
Reference and Computer Applications Section  
Central Library,  
Indian Institute of Technology Bombay,  
Mumbai - 400076 India  
E-mail: [jadhavm@iitb.ac.in](mailto:jadhavm@iitb.ac.in)  
Phone: 2576 8922

URL: - <http://www.library.iitb.ac.in/~mnj/>