Agenda & Notes

2009: 1st Meeting *of the*

Board of Governors

Venue of the Meeting

Office of the Additional Secretary,
MHRD, Room No 120,
"C" Wing, Shastri Bhawan, New Delhi

Date and Time of the Meeting

March 23, 2009 at 12.00 Noon

PDPM
Indian Institute of Information Technology,
Design and Manufacturing Jabalpur

Agenda of the First Meeting of the Board of Governors, 2009
[To be Held on March 23, 2009 at 12.00 noon in New Delhi]

Contents

BOG/2009:01.01 Opening Remarks by the Chairman

BOG/2009:01.02 **Overview and Action Taken Report by the Director**

A. **Status of Deemed University Proposal of the Institute -** The UGC Expert Committee chaired by Prof. Dhande, Director, IIT Kanpur visited the Institute during December 1-2, 2009 to assess the Institute for conferment of Deemed University status under de-novo category. The AICTE team of the Committee has recommended the conferment subject to the compliance of (i) fulfillment of cadre ratio (ii) student faculty ratio (iii) approval of UG/PG manual (iv) Equipping the Lab and library as per the approved curriculum following AICTE norms. The Institute has responded to the communication received from UGC and it is expected that the Institute's proposal of Deemed University status will be accepted by UGC soon.

B. **Progress on IIITJ* Japan Collaboration –**

(i) **Consortium Partners**: A Japanese Consortium with twelve partners having six universities and six industries in Japan has been formed.
(ii) **Undergraduate curriculum** has been framed jointly by curriculum development committee of the Institute and Japanese professors, to suit the academic philosophy of the Institute for development of expertise in IT enabled design and manufacturing.

* Here onwards, IIITJ shall mean Pt. Dwarka Prasad Mishra Indian Institute of Information Technology, Design and Manufacturing Jabalpur

(iii) **Japanese Coordinators**: Three experts from Japan have been made the coordinators for cooperation towards development of IIITJ. They are - Prof. Yoshimi Ito (Design Engineering and Manufacturing), Prof. Nanya (Electronics and Computer Science and Engineering) from University of Tokyo and Mr. Suzuki from GE Energy.

(iv) **Cooperation in Teaching Programme**: The Japanese experts are now contributing in the Institute's teaching programme in one of the following ways (i) Teaching of full course (ii) Teaching of short term capsule course called Elective in Modular Form (EMF) (iii) Teaching approximately 1/3 to 2/3 of the course and rest taken care by internal faculty. The course will be gradually developed by IIITJ faculty for teaching in later years. Both sides will keep identifying a few areas in each year, where Japanese expertise will be more effective initially. **Fifteen experts** have visited the Institute to deliver lectures in the current academic session.

(v) Prof. Ito has also proposed the idea of having **Japanese professor/expert as mentors** for post graduate students in their research programme leading to thesis work. Through this concept, the students will get opportunities to visit and work in state of the art research labs of Japan. This will also serve as the first step towards collaboration in research.

(vi) **Visits of Institute's faculty to Japanese Institutes and Industries** helped in making contacts and bringing eminent people for short term courses on emerging areas of design and manufacturing.

(vii) **Students visits, Internships and job opportunities**

Ten students visited various Institutes and Industries in Japan in June and December 2008. This exposure visit of students helped them understand the education and training system of Japan. The industry people also explained the students the process of getting summer internships in some of the leading industrial labs. They also got an exposure to opportunities of higher education in Japan.

Six summer internships have been offered by companies in Japan to students of IIITJ in addition to **five short term exposure visits of students** in June 2009.

Very recently, Japan Embassy has also given some positive signals for possible placements of our students in Japanese companies.

C. **Dr. P.K. Padhy Awarded BOYSCAST Fellowship** – Dr. P.K. Padhy, Assistant Professor, has been awarded BOYSCAST fellowship to work in Prof. Hori's lab in University of Tokyo, Japan. He will proceed to Japan in the month of May, 2009 to work there for a period of eight months.

D. **Workshop on Compiler Construction: From Practice to Theory** – A workshop on 'Compiler Construction: From Practice to Theory' was organized by the Institute for university and college teachers of Madhya Pradesh in the month of December, 2008. Apart from 17 college teachers, students of IIITJ also attended the workshop and scored well in the test conducted after the workshop. The resource persons were Prof. Amitabha Sanyal and Dr. Uday Khedkar of IIT Bombay and two of their

PG students. **Based on the performance of our students, three students have been offered research fellowships and summer internships at IIT Bombay**.

E. **Research Projects:** Work on the following research projects is on.

(i) **Dr. Puneet Tandon**, PI, "Geometric Modeling, Analysis and Design for Generic Definitions of Custom-Engineered Cutting Tools" Period 2008-11, **funded by DST.**
(ii) **Dr Prabin Kumar Padhy** PI " Improved Controller Design for AQM Routers Supporting TCP Flows" **funded by DST**.

F. **Construction Activities** – Core Lab Complex is nearing completion and will be handed over to the Institute in the month of April, 2009. **Construction of hostels is very slow** and it may take atleast three months to complete only two wings of the hostel. The Institute is looking for other alternatives to cater to the need of next batch of students.

G. **Students Festivals** – Students organized cultural festivals Tarang 2009, technical festival 2008 and sports festival Gusto 2008,. Tarang 2009 was well attended by students of other colleges also.

H. **Action Taken on the minutes of Special Meeting of the Board held on January 5, 2009**

(i) Regarding IIITJ Japan collaboration a detailed report has been presented and is given in **Annexure 2**.
(ii) Minutes of the meeting of the Director with three architects could not be finalized since one of the three architects has not signed the minutes. The Institut has asked him to send his comments on the minutes. However, till date no comments have been received.

BOG/2009:01.03 Confirmation of the Minutes of the Meeting held on 5th January 2009

Minutes of the Special Meeting of the Board of Governors held on 5th January 2009 were circulated to the members. If there are no comments/ suggestions, Board is requested to confirm the minutes. (Please see **Annexure 1**).

BOG/2009:01.04 Concept Paper on Design: Identification of Thrust Areas in the Context of IIITJ Japan Collaboration

The Institute was established with the sole aim of providing education and training in the area of IT enabled design and manufacturing, where students are exposed to current trends in the field and get comprehensive hands on experience of design, development and prototyping products using modern IT tools. Since Japan is one of the leaders in manufacturing technology, purpose of Govt. of India's initiative to link the Institute with Japanese academic institutes and industries was to make this kind of education more effective and meaningful, which would lead to skilled manpower in India in certain cutting edge technologies.

The Institute's main emphasis is on design and manufacturing, and initial collaboration with Japanese academic institutes and industries has been quite successful leading to development of undergraduate curriculum and summer internships of students, it is the

need of the hour that Institute identifies certain focused areas where collaboration with Japan would help us develop expertise and infrastructure in the Institute that becomes our main strength.

In view of this, It is proposed to hold a brain storming session on what aspects of design should the Institute identify for further collaboration on research and development with academic and industrial organizations of Japan. In other words, it is needed to hold a session on preparation of a Concept paper on 'What Aspects of Design' should the Institute concentrate on, to develop manpower and centre of excellence in the country.

BOG/2009:01.05 Recommendations of the minutes of Finance Committee held on March 23, 2009 at 11.00 am.

The Finance Committee will be meeting on March 23, 2009 to discuss the following agenda items.

(i) Revised Budget Estimates: 2008-09 and Budget Estimates: 2009-10.
(ii) Recommendations of the Building and Works Committee meeting held on Feb. 18, 2009.
(iii) To consider extending the faculty perks to the Visiting Faculty/Research Engineers/Scientists.
(iv) Honorarium to guest faculty for lectures and lab.
(v) Any other item with the permission of the Chair.

Minutes of the meeting will be placed before the Committee in the meeting itself (Please see **Annexure 3** for detailed agenda of the meeting). .

BOG/2009:01.06 Ratification of the decisions /approvals of the Chairman on the following items

(a) Recommendations of the Selection Committee held on January 16, 2009 for faculty Positions (Please see **Annexure 4**).

A selection committee to select and recommend the candidates for faculty positions against rolling advertisement of the Institute was held on January 17, 2009. following persons were recommended for faculty positions.

I. Dr. Atul Negi, (Assistant Professor, CSE, on lien from Central University, Hyderabad) for visiting faculty for a period of 2 years on the pay scale of Rs. 16,400 – 20,000/- protecting his emoluments at Central university, Hyderabad.

II. Mr. P.K. Jain, (Ph.D. thesis in ME submitted at IIT Delhi) for Assistant Professor subject to completion of his Ph.D. thesis with starting basic salary of Rs,. 12,840/-.

III. Dr. Amarnath (Ph. D. in ME from IIT Madras) for Assistant Professor with starting basic salary of Rs. 12,000/-.

The above recommendations were approved by the Chairman on 20-1-2009.

(b) Leave of eight months to Dr. P.K. Padhy on his being awarded BOYSCAST fellowship of DST

Dr. P.K. Padhy, Assistant Professor, PDPM IIITDM, Jabalpur has been awarded BOYSCAST Fellowship of DST for a period of eight months to work in Professor Hori's lab at University of Tokyo. His visit will be fruitful for the Institute as his exposure to

state of the art lab of Prof. Hori will help the institute in developing a good control systems lab in IIITDM Jabalpur.

On Director's recommendation, the Chairman approved a leave of eight months to Dr. P.K. Padhy on full salary under the condition that he signs a bond with the Institute to the effect that he will return to Jabalpur after his visit and will join PDPM IIITDM Jabalpur. He will serve the Institute for at least three years after his return from Japan, failing which he will be required to deposit the entire amount of salary, which was paid to him during the period of his leave from the Institute.

BOG/2009:01.07 Any other item with the permission of the Chair

ANNEXURE-1

Minutes of the Special Meeting of the Board of Governors

(Held on January 05, 2009 in Udyog Bhawan, New Delhi)

PDPM

Indian Institute of Information Technology, Design & Manufacturing Jabalpur

Minutes of the Special Meeting of the Board of Governors

[Held on January 05, 2009 in Udyog Bhawan, New Delhi at 4.00 pm]

Members Present:

Shri. A.K Singh Secretary (IAS) Ministry of Textile, Udyog Bhawan, New Delhi	Chairman
Mr. Ashok Thakur, Additional Secretary ,IAS C Wing, Shastri Bhawan, MHRD New Delhi	Member
Mr. Anurag Jain (IAS) Secretary to CM & IT Department Room No-533, Mantralaya. Vallabh Bhawan Bhopal	Member
Prof. H. P. Dikshit Director General School of Good Governance & Policy Analysis (An Autonomous Institute of Govt. of MP) Room No.402, 4th Floor, Narmada Bhawan 59, Arera Hills, Bhopal – 02	Member
Prof. Manoj Harbola Professor, Dept of Physics IIT Kanpur	Member
Prof. Aparajita Ojha Professor PDPM IIITDM, Jabalpur	Member
Prof. Sanjeev Bhargava Director PDPM IIITDM Jabalpur	Member
Prof. Amit Ray PDPM IIITDM Jabalpur	Special Invitee
Mr. Raghunath Bhattacharya Administrative Officer PDPM IIITDM Jabalpur	Acting Secretary

Members Absent:

Shri. S D Dimri — Member
GM, Ordinance Factory Khamaria
Jabalpur

Prof. S G Dhande — Member
Director
Indian Institute of Technology, Kanpur-208016

Dr. A Saxena — Member
Acting Director
NID Ahmedabad

Prof. D.P. Singh — Member
Vice Chancellor
IT BHU, Varanasi

Dr. Manoj Gaur — Member
Executive Chairman, CEO
"JA House", 63, Basant Lok, Vasant Vihar
New Delhi

Dr. Rajeev Sanghal — Member
Director
International Institute of Information Technology
Gachibowli, Hyderabad – 500019

BoG/2008-09: 3.01 **Opening Remarks by the Chairman**

Chairman welcomed the members and requested the Director to proceed.

Bog/2008-09: 3.02 **Overview Report of the Director**

The Director began by first giving a report on the progress made after the last meeting of the Board held on November 7, 2008. He mentioned the following.

- **"Deemed to be University" Status to the Institute under *de novo* Category**. The Expert Committee of the UGC chaired by Prof. Dhande, Director, IIT Kanpur visited the Institute during December 1-2, 2008. The Committee has submitted the report to the UGC.
- **Visits of Five Undergraduate Students to Japan**. Five undergraduate students of the Institute made a visit to various Japanese universities/ institutes and industries in December 2008. This exposure visit of students helped them understand the education and training system of Japan. The industry people also explained the students the process of getting summer internships in some of the leading industrial labs. They also got an exposure to opportunities of higher education in Japan. This visit was fully supported by Japan Govt.
- **Appointments on non-Academic Posts**: Duly constituted Selection Committee for the selection of Deputy Registrars (DR) against two posts of DR met on December 30. The recommendations of the Selection Committee are being put in the agenda under Point # BoG/2008-09: 3.07 of the present meeting.
- **Visits of Japanese Experts for Support in Teaching Programme of the Institute.** A schedule for visits of twelve professors / experts from Institutes/Industries of Japan has been received by the Institute.
- **Proposal of Okuma to Gift Two CNC Machines.** M/s Okuma, Tokyo had shown interest in supplying two state-of-art CNC machines to the Institute. The Institute had constituted a Committee comprising of 4 faculty members of Mechanical Engineering to look into the desirability of such machines in the Institute. The Committee has submitted its report in

affirmative. The Institute has forwarded the report to Director (T) in Shastri Bhawan for information and advice. Omuka required duty etc. to be exempted by the ministry.

- At this juncture some members expressed their concern on the progress of this collaboration It was said that the exact nature of cooperation with the Japanese was still not very clear. They also expressed that instead of keeping it vague the Institute should come out with a document on the progress made in this direction and what needs to be done to further strengthen this cooperation. It was also decided that the institute will present a status report on the same in the next meeting of the Board.

BoG/2008-09: 3.03 **Confirmation of Minutes of the 2nd Meeting 2008-09 of the Board of Governors held on November 07, 2008**

Prof H P Dikshit pointed out that the Board in its meeting held on July 07, 2008 had agreed that faculty and students of IIITDM Jabalpur would be participating in the joint initiatives of the School of Good Governance & Policy Analysis, Bhopal and would provide its expertise for the studies in the School related to good governance. However, the same was not recorded in the minutes. With these changes the minutes of the 2nd meeting, 2008-09 held on November 07, 2008 were confirmed.

BoG/2008-09: 3.04 **Action Taken Report**

- **Meeting of Panel of Architects with Mr. Ashok Thakur, Additional Secretary MHRD and the Director, Prof. Sanjeev Bhargava.**

The Board noted the progress made in conducting the meeting in Shastri Bhawan, New Delhi with all the three architects of the Institute. As per the concurrence of members of this meeting, a subsequent meeting was held in Jabalpur on December 22, 2008 to decide the professional fee to be paid to the architects. However, the minutes of the meeting could not be placed before the board. The Board desired to place it in the next meeting. The Board agreed, in principle, for the fee of 5% to be paid to the architects provided that the responsibility of quality management of each project is also included in the scope of work of architects. The Board also desired that the entire scope of work to be covered in the agreement to be signed with the architects be also placed before it.

Other items were already discussed before in the Director's overview report.

BoG/2008-09: 3.05 **Revised Budget Estimates of 2008-09 and Budget Estimates of 2009-10**

The Board directed that the Institute should prepare its Revised Budget Estimates as per allocation of the budget by MHRD after consulting of Mr. S.K. Ray, Joint Secretary and the Finance Advisor, MHRD who informed the Board that the budget allocated to the Institute in FY 2008-09 was Rs 26.00 crores. The Board authorized the Chairman to approve the Revised Budget Estimates if they were found to be reasonable and as per requirements by the Chairman.

BoG/2008-09: 03.06 **Recommendations of the Special Buildings & Works Committee Meeting held on January 05, 2008**

The Board approved the preliminary estimates of the Electric Supply and Management System (Phase I) proposed by B&WC and further recommended by Finance Committee. Other items could not be discussed in the board and were deferred for discussion in the next meeting.

Raghunath Bhattacharya
Administrative Officer

AOjha
Aparajita Ojha
Director

ANNEXURE-2

Japan India Partnership in a New ERA: Strategic Orientation for Japan India Global Partnership

JAPAN INDIA PARTNERSHIP IN A NEW ASIAN ERA:
STRATEGIC ORIENTATION FOR JAPAN INDIA GLOBAL PARTNERSHIP

Eight Fold Initiative for Collaboration towards Development of Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Design and Manufacturing, Jabalpur

Goals and Progress/ Achievements

Goals

The two sides had decided to nurture and strengthen PDPM IIIT DM, Jabalpur (IIITJ). This was planned through the following steps.

1. Academic assistance by Japanese side to develop expertise in those areas in which Japan has developed considerable skills and expertise.
2. Formation of Consortium of Japanese universities/institutes/industries for providing academic assistance in teaching and research in order to achieve the goals as mentioned in item 1.
3. Exchange of scholars between the Consortium partners or other organizations in Japan and IIITJ and the visits of IIITJ students for development of expertise as mentioned in Item 1.
4. Both sides to secure financial resources from public/private sectors for development of IIITJ.
5. Consortiums partners from Japan (as mentioned in Item 2) to hold joint conferences/ symposia / workshops on advanced research topics in India and Japan.
6. Continue discussion to explore other aspects of cooperation with respect to IIITJ.
7. Setting up of a joint steering committee at a later stage.

Progress and Achievements

1. **A Consortium of Universities and Industries in Japan has been formed** with 12 partners consisting of 4 national universities, 2 private universities and six industries. (Details in Annexure J1).

2. **Development of curriculum to suit the academic philosophy of the Institute for development of expertise in engineering design and manufacturing through IT enabled tools.**

3. **Visits of Japanese Experts to IIITJ - Cooperation in IIITJ's teaching programme**
   a. Three experts from Japan were made the coordinators for cooperation towards development of IIITJ. They are - Prof. Yoshimi Ito (Design Engineering and Manufacturing), Prof. Nanya (Electronics) and Mr. Suzuki (Computer Science).

b. Initially **five experts** from universities and industries from Japan working in the field of Engineering Design and Manufacturing visited the Institute and delivered lectures in following areas - **Design Engineering, HDD Manufacturing technologies, semiconductors and formula SAE.** (Details in Annexure 1)

c. In January and March 2008, **eight experts** from Japan visited the Institute for expert lectures on courses that were being running in the Institute. These lectures were in the areas - **Computer Graphics, Simulation and Visualization, Material Design and Processing, Computer Integrated Manufacturing and Control Systems.** (Details in Annexure 1)

d. **These visits became more meaningful** when experts from Japan also participated in the Institute's teaching programme by **offering short time capsule courses called EMF (Elective in Modular Form).**. Some of the courses that have been offered by the Japanese experts are as follows- (i) Measurement of Interface Pressure by Means of Ultrasonic Waves (ii) Recent Trends in Design and Manufacturing (iii) Compiler Optimization Technologies (iv) Natural Language Processing for Information Management Systems.

e. **Discussions with Prof. Ito have brought the next level of collaboration in the teaching programme of IIITJ**. It is agreed to teach some courses on emerging trends and cutting edge technologies with the help of expertise from Japan, where 2/3 of the course will be initially covered by Japanese experts and 1/3 will be taken care of by IIITJ faculty. The course will be gradually developed by IIITJ faculty for teaching in later years. Both sides will identify a few areas of interests in which teaching will be performed in each semester. Presently we have sought their help in the following courses (i) Design of Mechanical Systems (ii) VLSI Design and Testing (iii) RF and Microwave Engineering.

f. Prof. Ito has also proposed the idea of having **Japanese professor/expert as mentors** for post graduate students in their research programme leading to thesis work. Through this concept, the students will get opportunities to visit and work in state of the art research labs of Japan. This will also serve as the first step towards collaboration in research.

4. **Visit of faculty from IIITJ to Japan – Helped in making contacts and bringing eminent people for short courses on emerging areas of design and manufacturing.**

   a. An exposure visit of five faculty members for two weeks in December 2007 was fully supported by Japan Govt. The faculty members visited some of the research labs and met people working in the areas in which faculty from IIITJ wants to develop expertise. Since undergraduate programme has been the priority of the Institute, the faculty made efforts to contact people, which helped to a great extent to bring eminent experts from Japan to teach courses in the Institute. (Details in **Annexure J2**).

5. **Visit of ten students of IIITJ to Institutes and Industries in Japan.**

Visit of ten students, five each in June, 2008 and December 2008 was also fully supported by Japan Govt. This exposure visit of students helped them understand the education and training system of Japan. The industry people also explained the students the process of getting summer internships in some of the leading industrial labs. They also got an exposure to opportunities of higher education in Japan.

Another **short term visit of five students** has been scheduled in the month of June 2009. In addition, **one month summer internship of six students** in Japanese industries has also been finalized. It is also expected that students will get **some job opportunities** in Japanese companies through the initiation of Japan Embassy.

6. **Donation of a CNC Lathe Machine LCS 250** with cutting feed range of 0.0001 to 10^6 micrometer with 1 micrometer precision and a **Vertical Machining Centre MB -46 VA (VAE)** with spindle speed upto 35,000 by **Okuma Industry**. These are state of the art machines for manufacturing processes.

Areas in Which No Progress Has Been Made So Far

1. Consortiums partners from Japan (as mentioned in Item 2) to hold joint conferences/ symposia / workshops on advanced research topics in India and Japan.

2. Identification of Common Areas of Research Interest and Collaboration in Research.

   a. The Institute has proposed that the visits of faculty and students from IIITJ should be supported for longer duration, so that a ground could be prepared for identifying common areas of research interests for collaboration.

3. Setting up of a joint steering committee at a later stage. :

Areas Which Need to be Further Explored

1. Financial Assistance and Expert advise on Setting up Labs for Design Studio at IIITJ

2. Financial and Academic Help in Setting up Research Labs in Some of the Important Areas of Research of Common Interest.

3. Financial Assistance for visits of longer duration for faculty and students.

Consortium Partners from Japan for Development of PDPM IIITDMJ

Universities/Institutes:

1. University of Tokyo (National University)
2. Tokyo Institute of Technology (National University)
3. Tohoku University (National University)
4. Kyushu University (National University)
5. Kanagawa Institute of Technology (Private University)
6. Shibaura Institute of Technology (Private University)

Industries:

1. Hitachi
2. Toshiba
3. GE(Energy)
4. Sumitomo Metals
5. AMADA
6. Okuma

Visits of Japanese Experts to IIITDM Jabalpur

March 2006

1. Professor M. Kiuchi, Professor, University of Tokyo, Japan – For Curriculum Design
2. Professor Yoshimi Ito, Professor Emeritus, Tokyo Institute of Technology, Japan –Lectures on Design Engineering
3. Dr. T. Ohashi, Hitachi, Japan – Lectures on Production System
4. Dr. K. Kuroda, Sumitomo Metals, Japan, Material Design and Processing

March 21-29, 2007

1. Professor Yoshimi Ito, Professor Emeritus, Tokyo Institute of Technology, Japan – Lectures on Basic Mechanical Engineering
2. Dr. Eishi H. Ibe, Hitachi, Japan – Lectures on Semiconductors
3. Dr. Toshijir Ohashi, Hitachi, Japan –Lectures on HDD Manufacturing Technologies
4. Kazafumi Uda, Kanagawa Institute of Technology, Japan – Lectures on Formula SAE

January 6-12, 2008

1. Professor Takashi NANYA (University of Tokyo) – Curriculum Design
2. Professor Hiromasa SUZUKI (University of Tokyo) – Lectures on Computer Graphics, Simulation and Visualization
3. Professor Youichi HORI (University of Tokyo) – Lectures on Control Systems

4. Dr Yutaka OHTAKE (University of Tokyo) – Labs for Computer Graphics. Simulation and Visualization

March 10-14, 2008

1. Professor Yoshimi Ito, Professor Emeritus, Tokyo Institute of Technology, Japan – Lectures on Computer Integrated Manufacturing
2. Dr. Takashi Maeda, Sumitomo Metals, Japan – Lectures on Materials Design and Processing
3. Dr. Toshiro Tomida, Sumitomo Metals, Japan – Lectures on Materials Design and Processing
4. Dr. Koichi Kuroda, Sumitomo Metals, Japan – Lectures on Materials Design and Processing

August 3-5, 2008

1. Mr Matsumoto, AMADA, Japan

September 21 to October 11, 2008

1. Professor Yoshimi ITO, Professor Emeritus, Tokyo Institute of Technology, Japan – EMF (Short course) on Measurement of Interface Pressure by Means Of Ultrasonic Waves
2. Professor Takashi MATSUMURA, Tokyo-Denki University, Japan – EMF on Recent Trends in Design and Manufacturing
3. Mr. Yasuji FUKAYA, OKUMA Co., Japan – EMF on Recent Trends in Design and Manufacturing
4. Professor Shin'ichi WARISAWA, University of Tokyo, Japan – EMF on Recent Trends in Design and Manufacturing
5. Mr. Hitoshi HIBI, Denso, Japan – Lectures on CIM for Motor Car Industry – In Case of Alternator
6. Mr. Arvind Kharbanda, Denso India, New Delhi (Interpreter)

January 11-17, 2009

1. Prof. Kouichi Hori, The University of Tokyo, EMF on Natural Language Processing
2. Dr.Yuki KARASAWA, The University of Tokyo, Labs for EMF on Natural Language Processing for Information Management System
3. Dr. Ryuuzi Takanuki, Hitachi Ltd., Optimization Technology for Compiler Construction.

Feburary 8 -17, 2009

1. Hiromichi Onikura, Kyuushu Univesity

2. Yasufumi Suzuki, Railway Technical Research Institute

February 22-28, 2009

1. Dr.Keiziro Hayashi, Renaissance Technology
2. Dr . Hiroshi Suzuki, GE Energy

March 15-21, 2009

1. Prof. Kazufumi Uda, Kanagawa institute of Technology
2. Dr. Hiro MASUDA, Renaissance Technology
3. Prof.Takashi NANYA, The University of Tokyo, EMF on Distributed and Fault Tolerant Systems
4. Prof. Masao ISHIHAMA, Kanagawa Institute of Technology

March 29 – April 4, 2009

1. Prof.Shinichi WARISAWA, The University of Tokyo

Report of Five Faculty Members on Japan Visit

Period: December 1, 2007 to December 15, 2007

A Report of the visit by Dr. Tanuja Sheorey, Associate Professor, Mechanical Engineering

As part of the "India-Japan Collaboration Project – IIITDM Jabalpur" an expository visit was arranged for the five faculty members of IIITDMJ to Japan. The visit was segregated into three groups on the basis of the specializations of the faculty members of IIITDMJ. One host professor was assigned from Japanese side to coordinate the visit for each group. Host professor for our group was Prof Kiuchi, Professor Emeritus, University of Tokyo. The itinerary of our group is attached as annexure I with this report.

The basic idea of this visit was to make the visiting faculty members of IIITDMJ familiar with the academic and research environment of Japanese universities. The itinerary of our group consisted mainly of visits to the laboratories of various Universities in the areas of simulation and fabrication of micro-nano devices and sheet metal products. A few visits were also planned to see the state-of-the-art facilities of the industries specializing in these areas and collaborating in the research programs of the universities and/or carrying out independent pioneer research.

The universities visited by us during the period were University of electro-communication (2 days), University of Tokyo, Hongo Campus (3 days); Nihon University (1 day), Tokyo Metropolitan University (2 days) and Shizuoka University, Hammamatsu (2 days).

General Observations

It has been observed that professors are working on research projects in collaboration with industries in all the research labs visited by us. Research labs are equipped with state-of-the–art technology with respect to instruments, machine tools and softwares. The labs are known by the names of the professors working in that lab and a strong collaborative group works jointly on research projects using facilities available in the respective lab. The group consists of one professor, one associate professor, one or two assistant professors, doctoral students and master level students. Also, professors of different disciplines are working in collaboration on projects of interdisciplinary nature.

The details of our visits to various research labs is presented below in the following category

- Areas of research fitting into the theme of our Institute
- Areas of research related to individual's specialization
- Areas of research where possible collaboration can be sought
- Possibilities of summer internship opportunities

Areas of research fitting into the theme of our Institute

The group has visited research labs involved in simulation of manufacturing processes, design and development of machines tools and machine tool accessories.

In the University of Electro-Communication, the group has visited Prof Murata and Dr Kuboki's lab. The lab is involved in simulation of manufacturing processes like bending, forming, extrusion. Dr Kuboki has worked on the problem of failure of shaft due to internal crack during forming process. Simulation of the manufacturing process of raw material and finished product has helped in finding the cause for the development of internal cracks. Prof. Murata has worked on a new idea of bending operation, named MOS bending. The idea was to make one die do all kinds of bending. The group came out with the result that there are only 4 control parameters to check, to program bending machine to get desirable bend. Based on this research, the group has designed the bending machine and in collaboration with a German Co., development of the new CNC bender has been done. Already 3 generations of the bending machine are in the market all over the world.

The group is also working on simulation of in-plane bending of strip metal. A bending machine has been designed to study effect of various parameters that control the in-plane bending process. The work on extrusion process is concentrated on how to make material light without compromising with the strength. The group is working on holed-rib, to be casted with hollow extruded tube. A special extrusion mandrel has been designed and fabricated in the lab to allow holed-rib to be casted with the tube during extrusion process. Parameter study is in progress to get the extruded part without affecting the size and shape of the holes. During the discussion session, further research possibilities in this direction have been explored. It has been observed that the simulation part of the project can be done in our institute independently.

The research in Prof Ming's lab in the same university is mainly focused on development in robotics. A group of students have demonstrated successful modeling and simulation of Golfer movement. They have developed a robot arm getting motion from direct motor. With the prototype, quite high speed of the arm movement has been achieved. The group has also mathematically modeled and simulated the movement of a golfer arm on MatLab and simulink. Another group of students have demonstrated the use of COP (centre of pressure) sensors, made of PZT material and pressure conducting rubber as sensors in robot arm.

The research in Prof Mitsuishi's lab in the department of precision engineering, University of Tokyo is focussed on design and development of precision medical robots. Second generation of robot for doing master-slave surgery has already been developed in the lab. The slave robot follows the actions of a surgeon remotely placed (master). The group is presently involved in testing the precision of the movements of the forceps and its vibration problems. The group has also developed a reduced incision bone cutting machine tool for total knee arthroplasty with seven degrees of freedom. Infrared sensors are used in the machine to locate tool with respect to the bone position. With a small incision by the surgeon, knee bone cutting operation can be performed with precision.

Prof Mitsuishi's group is also involved in research on improving upon performance of machine tools. Some of the problems taken up by the group are vibration problem of cutting tool, summer deformation of machine movement, shift of tool and work-piece positioning by few microns, etc. The machine centre is equipped with these machine tools used to train the students of undergraduate level as part of their course curriculam. The same is utilized to do research on above mentioned problems of machine tools and thereby develop adaptive controls. The group has requested manufacturer of the machine tools for some modifications so as to be able to perform experimentation according to the research requirements of the lab. PG students are involved in these research projects. The PG students then take care of training of UG students.

The group has also developed force sensors to be used for force measurement on workpiece during cutting operation. The platform housing the force sensor has been made fail-safe against excessive force by setting an alarm.

Our group has also visited research labs involved in simulation and fabrication of micro-nano devices. Prof Yang's lab from Tokyo Metropolitan University is presently carrying out simulation and experimentation on flow of nano particles through micro channel. They are specifically interested in near wall flow characterization. Advanced level instrumentation is being used to carry out experimentation.

During the discussion session about UG course curriculam, I have told Prof Yang about the project two of our third year students have done on fabrication of nano particles and its possible applications as damper when subjected to magnetic field. When I discussed with him the non-availability of the experimental facility to carry out ferro-fluid characterization and thereby exploring its further use, he agreed to make the facilities of his lab available for the same. I have also discussed with him the possibilities of summer internship of these students in his lab. The lab is ready to take students provided financial part is taken care of. The students may start discussing about the possible projects, before finalizing the internship.

Areas of research related to individual's specialization

I requested Prof Mitsuishi to arrange a visit to the CFD lab. The lab is involved in simulation, modeling and experimentation of bubble flow. The group is presently involved in simulation of flow of bubbles through converging-diverging channel. The project has got potential to be utilized for cleaning applications. The lab also has micro-bubble generating facility. Owing to the oscillatory movement of the bubbles, it is easy to detect the presence of bubbles in human body. The idea has been explored and the group has designed and fabricated the equipment, which is currently being tested.

During the discussion session, the idea of possible collaboration was discussed. The discussion was mainly on the broad areas of CFD for possible collaboration. However topics of mutual interests for future collaboration could not be specified during the visit.

Tour to Amada Company

Our group has visited only sheet metal product manufacturing division. Details of various sections visited are given as under.

1. VPSS (Virtual Project System Simulation): This section develops CAD model of the product from the sheet metal based on customer's requirement, on solid works. Then another software, named sheet metal works (developed in-house), converts the CAD model into CAM design. The outcome of the sheet metal works is detailed template of punching/blanking operations to be performed. The CAM operations are then virtually performed on a software, named Dr. ABE (Automatic blank executer).
2. Blanking section: Actual blanking operations are performed here by both conventional and Laser cutting.

3. Bending Section: Bending section uses both Conventional (manual) and robot operated (in case of large number of bends to be worked on a part) machines. The section also has special bending machine with VI for bending angle precision with which required bending radius can be achieved. Quite thick pieces can be bended with special machines. The machine adjusts its power according to thickness of pieces.
4. Welding: The section is using mostly Laser machines. Sophisticated spot welding machine has been developed in-house to cater to the special need of the products.
5. Power Press: New kind of power press developed in-house with digital servo drive to control the kind of motion to be given to the RAM.
6. Special machines have been developed in-house for large size pieces in which all the operations are performed including tool changing head.
7. Sawing: Special kind with pulsating saw to reduce cutting force and noise.

Tour to Suzuki Company, Hammamatsu

The group has visited its welding, sheet metal cutting, assembly and testing division.

The visits to the industries help in bridging the gap between academics and applied field. The exposure about the requirement of the industries helps in formulating the directions of the research. Continuous interaction with the industry then helps in improving upon the developed products.

Conclusion

The visits to various labs were quite educating towards knowing the trend of research, the exposure to various instrumentations and their use in developing research facility. This exposure will definitely help us in establishing our own lab as well as educating students about the recent trends in practice in the industries as well as research labs.

Period: December 08, 2007 to December 22, 2007

Visit by Dr. Puneet Tandon and Dr. Vijay Kumar Gupta, Associate Professors, Mechanical Engineering

Preamble

As part of the "India-Japan Collaboration Project – IIITDM Jabalpur" an exposition visit was arranged for the five faculty members of IIITDM to Japan. The visit was segregated into three groups on the basis of the specializations of the faculty members of IIITDM. Each group was allotted a host professor, who in turn coordinated the visit for the members of the group. The details of the groups and host professors are as follows:

Group Members	Host Professor
1. Dr. Puneet Tandon & Dr. V.K. Gupta	Prof. Y. Ito, Professor Emeritus, Tokyo Institute of Technology
2. Dr. Pritee Khanna	Prof. T. Nanya, Professor, RCAST, University of Tokyo

3. Dr. Tanuja Sheorey & Dr. M.K. Roy — Prof. M. Kiuchi, Professor Emeritus, University of Tokyo

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The basic idea of this exposition visit was to make the group members made familiar with the Japanese academic and research environment through arranging visits to various laboratories of different universities of Japan and industries collaborating in the research programmes. The visits were planned as per the areas of interests of the group members.

The itinerary of our group (Group 1) consisted of two components, namely (a) visit to the laboratories of various professors in the areas of manufacturing, mechatronics, MEMS and related disciplines and (b) visit to the state of art facilities of some of the industries of Japan specializing in these areas and collaborating in the research programs of universities or carrying out independent pioneer research.

The universities visited by us during the period were Tohoku University, Sendai, Tokyo Institute of Technology (Tokyo Tech) at their campuses at Nagatsuta and Ohokayama and Kanagawa Institute of Technology (KAIT), while the industries visited were Nikon, Nihon Seiko (NSK) and Toshiba Machine Company.

The major observation of the group members during the visit was that Japanese universities have very strong connection with industries and the laboratories of the universities have lots of modern equipment for carrying out advance researches. The examples include for example having independent Scanning Electron Microscopes (SEMs) in multiple labs or availability of three clean rooms at Tohoku University. Most of the laboratories were setup by funds provided by universities and governmental bodies with equipment conveniently donated / landed by the industry. Each lab had one (or more) professors, one or two associate professors, and a few assistant professors and research associates, along with research assistants / post-doctoral fellows, doctoral, masters and undergraduate students. Another interesting observation was that in Japanese universities, undergraduate students have to be a part of one of the labs depending on their area of interest. This provides good exposure to the students as well as working hands to professors of the lab.

Week 1: Visit to Tohoku University, Sendai

The schedule of our visit to Tohoku University at Sendai consists of visit to six laboratories of the Department of Nanomechanics of the university and an industrial visit to Nikon Sendai. The visits to laboratories varied from Manufacturing, Material Characterization, Reliability, MEMS to Nano Precision Manufacturing and measurement. Various labs visited are as follows:

1. Professor Kuiyagawa Lab (Nano-precision mechanical manufacturing and M4 processes)
2. Professor Yokobori Lab (Characteristics on mechanical behavior of materials)
3. Professor Hane Lab (Optics, Micro-fabrication and MEMS)
4. Professor Koyanagi Lab (Integrated circuits, Opto-electronic integrated systems and Brain-type computer)
5. Professor Wei Lab (Nano-precision measurement)
6. Professor Saka Lab (Evaluation of materials system and Reliability of electronic packages)

Professor Kuiyagawa Lab

Nano-precision mechanical manufacturing laboratory of Professor Kuriyagawa is involved in the following areas of research:

(i) M^4 Processes (Micro/ Meso Mechanical Manufacturing Processes): Involved in nano level machining of the brittle materials using mechanical systems
(ii) Fluctuation-Free Ultra-Precision Aspherical Grinding: Development of a fluctuation-free ultra-precision aspherical surface generation system for high form accuracy of 25 nm and ultra-smooth and uniform surface roughness of several nm Ry.
(iii) Electrorheological Fluid Assisted Micro-Polishing and Machining: Increasing the viscosity of abrasive particles in proportion to the strength of an electric field, to gather abrasive particles at the tip of a needle-like electrode.

Professor Yokobori Lab

The work in Professor Yokobori lab is primarily in the area of testing of creep and fatigue. They are working on modeling and mechanisms of creep, mainly under the influence of thermal loading. The hardware available with them includes SEM, DFM, CCD Cameras and laser microscopes.

Another interesting and novel project they are carrying out is about Hardening of blood vessels. With an instrument developed in their lab, they bond a sensor to the person's vein and find out the level of hardness of the blood vessels and compare it with some standard reference value about the blood vessel's hardness.

Professor Hane Lab

The research carried out at Professor Hane Lab is mainly in the following areas:

(i) Micro-optics and sensors: Research on optical sensors for monitoring mechanical motions like Laser interferometer, optical encoder, optical position sensors, etc.
(ii) Optical MEMS and integration: Optical MEMS are studied for the applications of optical telecommunication and information interface. In the optical telecommunication, several optical components such as micro-lens, beam-splitters and micro-mirrors are integrated to realize special optical functions.
(iii) Nano-optics: Using electron beam lithography, subwavelength gratings (moth eye structure) are fabricated on photo detectors and light emitting diodes.
(iv) New materials for optics: GaN semiconductor is studied for a light source of opto-mechatronic systems. Combining GaN light source with Si MEMS, all the components necessary for micro optical systems can be integrated on one chip.
(v) Micromotors

Professor Koyanagi Lab

Professor Koyanagi and his group are extensively working on the MEMS. Along with his group members, we visited the Clean Room (Level 1000) of Tohoku University also. His group is the major user of the clean room of the university. Clean Room is shared among the faculty of various departments of the Faculty of Engineering (mainly, Mechanical, Electronics and Chemical). The major areas of research carried out by his group are as follows:

(i) Development of New Nano-Dots non-volatile memory with resonance magnetic tunneling property

(ii) 3D Group – 3D LSI
(iii) New Si interposer with low loss optical interconnection (optical imposer)
(iv) Novel Retinal Prosthesis systems with 3D stacked LSI chip
(v) Development of Si Microelectrode for platform of intelligent neural implant microsystem.

Professor Wei Lab

Professor Wei and his group works in the broader areas of nano-metrology and control. Their emphasis is on Precision Nanoystems like precision nanofabrication systems, precision nanometrology, sensor technology and precision motion control systems. The specific problems of research his group is focusing is

(i) Development of new technologies of precision nanometrology
(ii) Development of precision nanosystems cored with precision nanometrology

Professor Saka Lab

Professor Saka and his group carried out research in real environment at nano-level (without using any clean room facility) and the fields of research include:

(i) Acoustic resonant spectroscopy for characterization of thin polymer films
(ii) Thermal opening technique for nondestructive evaluation of closed cracks
(iii) Dry-contact Acoustic Imaging
(iv) Formation of metallic nanowires by utilizing electromigration
(v) Welding of Pt nanowires by Joule Heating

Nikon plant tour (Sendai Nikon, Natori city)

The manufacturing and assembly of three different products were shown and explained to us during our visit to Nikon plant. The tour includes (i) assembly of high end digital cameras, (ii) manufacturing and assembly of linear and rotary encoders.

Week 2: Visit to Tokyo Insitute of Technology, KAIT and a few Industries

Various labs of Tokyo Institute of Technology visited during the Week 2 are as follows:

1. Professor Shinno Lab (Shinno & Yoshioka Group, Precision & Intelligence Laboratory, Tokyo Institute of Technology, Nagatsuta Campus) (Ultra-precision machining)
2. Professors Yokota & Yoshida group (Precision & Intelligence Laboratory, Tokyo Institute of Technology, Nagatsuta Campus) (Mechatronics)
3. Professor Yoshino Lab, Tokyo Institute of Technology, Ohokayama Campus (Forming Technology)
4. Professors Iwatsuki & Okada Group, Tokyo Institute of Technology, Ohokayama Campus (Mechatoronics)

Professor Shinno Lab

Professor Shinno and his group main focus of research is ultra fine machining. His group is mainly involved in design and development of future ultra-precision machine tools, Establishment of ultra-precision machining technologies and its applications and realization of

future manufacturing systems. His group has developed an innovative mother machine for nano-machining (CAPSULE). The specific research topics of research carried out by his group includes:

(i) Machining environment-controlled ultra-precision machining
(ii) Nano-machining of hard and brittle materials
(iii) Product development methodology for precision machine system
(iv) Development of a high speed nanometer positioning table system
(v) In-process status monitoring of ultra-precision machining using a micro-sensor
(vi) Sensor-less Monitoring during ultra-precision Machining

Professors Yokota & Yoshida group

The main emphasis of research in his group, consisting of one associate professor and two assistant professors is in developing new types of actuators i.e. based on Electro-conjugate Fluids (ECF). The research projects carried out by his group are:

(vii) Electro-conjugate Fluids (ECF) jet driven micro motors
(viii) ECF soft actuators
(ix) ECF artificial muscles

Professor Yoshino Lab

Professor Yoshino and his group is involved in conducting research in the areas of nano/micro fabrication and machining, metal forming, FEM simulation, machining hard-brittle materials under external hydrostatic pressure, damage free machining functional and engineering surfaces. The specific areas of interests of his group are:

(i) Machining property of hard brittle materials under external high hydrostatic pressure
(ii) Nano forming of hard-brittle materials
(iii) Development of the functional surface by nano forming
(iv) Numerical simulation of material properties and microstructure for hot metal forming process

Professors Iwatsuki Lab

Professor Iwatsuki conducts undergraduate course on Mechatronics. He and his associate professor Dr. Okado also conducts laboratory exercises for the course. He explained in detail the course content and its supplementation in the laboratory. They are using one type of experimental setup for carrying out six lab exercises. The research carried out by their group is in the areas of

(i) Network structure Robots
(ii) Motion control of Robot with Over actuator Mechanism
(iii) Laser Speckle Interferometer with the Quad Aperture Method
(iv) Research on Sound Generation Mechanism of Signing Insects
(v) Manipulator Composed of Many Parallel Mechanism Units

Nihon Seiko (NSK) Fujisawa Plant Tour

NSK is one of the leading roller bearing manufacturers. The group was introduced to the product line of NSK and carried out a tour of their Engineering Centre. The centre carries out

tests, research and analysis of Noise. Grease lubrication. Fatigue and durability. Higher-speed spindle. Besides, the company is also involved in advanced research on Mechatronics and Bio-MEMS.

Toshiba Machine Company, Numazu Plant Tour

Toshiba is one of the large-size machine tool manufacturers of the world. They have the capability to carry out machine tool manufacturing from raw material to final product, all in house. We were able to see one of the largest machine tools in the world at their plant.

Kanagawa Institute of Technology, Atsugi

Kanagawa Institute of Technology (KAIT) main research thrust area is SAE Formulae 1 automobiles. We visited the university's department of Vehicle System Engineering and various laboratories under the department. We could have a look at their research facilities for motor car, including the driving simulators developed by them and under progress.

December 02, 2007 to December 15, 2007

Visit by Dr. Pritee Khanna, Assistant Professor, Computer Science and Engineering

The basic aim of this exposure visit was to get familiar with the Japanese academic and research environment through visits to various laboratories of different universities of Japan and industries collaborating in the research programmes. Once we are familiar with the system we can open new avenues for the Institute as well as for collaboration on research on individual faculty basis. Professor Takashi Nanya was my host professor and he arranged my schedule mainly keeping my research interests in consideration (See Annexure I). He has also scheduled my visit to a few other labs on my request from the Institute point of view.

Universities Visited:
The universities visited by me during the period were:

- The University of Tokyo at Komaba Campus
- Tokyo Institute of Technology (TIT) at Ohokayama campus
- National Institute of Informatics (NII)
- National Institute of Advanced Industrial Science and Technology

In the Komaba campus I visited:

- Research Center for Advanced Science and Technology (RCAST)
- Institute of Industrial Science (IIS)

IIS is the largest research group of the University of Tokyo having more than one-hundred faculty members.
I also visited Digital Human research Center at National Institute of Advanced Industrial Science and Technology.
Although I visited The University of Tokyo at Hongo Campus but there I could not interact with any Professor as it was not a preplanned visit.

Labs Visited:
Various labs of RCAST, The University of Tokyo, visited are as follows:

- Prof Nanya Lab
- Prof Suzuki Lab
- Prof Hori Lab

Various labs of IIS, The University of Tokyo, visited are as follows:

- Prof Kitsuregawa
- Prof Sato
- Prof Matsuura

In Tokyo Institute of Technology, I visited labs of:

- Prof Yokota
- Prof Nakajima

In NII, I visited lab of Prof Adachi and Prof Aizawa.

General Observations:

1. Japanese universities have very well established connections with industries and most of the projects running in the laboratories of the universities are live projects.
2. In Japan, Industries prefer to come to Universities Professors to solve their research oriented problems. Japanese Industries welcome and encourage research scholars and postgraduate students to join industry after completing their studies.
3. All labs are equipped with modern facilities for carrying out advance researches.
4. Undergraduate students are also part of the labs where they get an exposure to real life problems. This gives an added confidence to the students.
5. I have talked to Japanese Professors whomsoever I met there regarding the possibilities of providing summer internship opportunities. Their responses were almost same. They were all enthusiastic to welcome our students but they had raised a problem. They told that they are unable to arrange the accommodation for short duration for our students in Tokyo. In university they won't have facilities to take care of these students. They said if ministry provides financial support and some method to solve this problem they are happy to provide summer internship opportunities to our students. Another important point is that most of them want that the duration of summer internship should be at least six months.

Details of Labs Visited

Professor Takashi Nanya Lab

The areas in which work is going on in Prof Nanya Lab are:

- Dependable and High Performance Computing
- Computer Architecture
- VLSI Design Methodology
- Asynchronous System Design
- GALS-DVS(Globally Asynchronous Locally Synchronous - Dynamic Voltage Scalling) Architecture
- Dependable Cluster System

Various projects based on the above mentioned topics are running in collaboration with industries like Toshiba, Matsushita etc. Professor Imai has designed a 32-bit Asynchronous Microprocessor (TITAC 2). Mr Bogdon is working on interaction faults of networked components. Mr Hoberto is working on designing fault tolerant systems using virtualization of merge core systems. Prof Nanya introduced the concepts of Dependable computing to me.

These topics are not directly related with my current area of interests but there is a lot of scope from the Institute point of view. As Low Power VLSI System, Dependable Network Home Facilities, Dependable Power Distribution Delay, Dependable VLSI – Asynchronous and

Dependable Computer using VM are the topics which are suitable to the IT, Design and Manufacturing theme of the Institute.

Prof Nanya has discussed curriculum in detail with me and identified the areas in which we need help from Japanese Professors. On my request, he agreed to take the course "Fault Tolerant System" also which we have to offer to our CSE students in their fourth year. In fact on my request he has arranged a meeting with Prof Hori of RCAST, whose area of specialization is Artificial Intelligence (one of the areas where we may be needing help).

I also made a presentation of my research work in the lab of Prof. Nanya, which was attended by him, Prof. Nakajima and all members of his research group.

Professor Hiromasa Suzuki Lab (Fine Digital Engineering Lab)

The areas are:

- The Convergence Engineering
- Medial Surface Generation for Thin Plate Structure
- Mesh Generation from Multi-Material Parts
- Digital Human Modeling
- CAD Model Viewer using Subdivision Surface Approximation
- Surface Modeling from Design Sketch
- Triangular Mesh Reconstruction from Measured Data Points
- An Approach for Remeshing Irregular Triangular Meshes
- G1 Stitching Method at Boundary Curve between Surface Patches in Computer Graphics
- Metamorphosis of Arbitrary Triangular Meshes with User-Specified Correspondence
- Interactive Mesh Dragging with Adaptive Remeshing Technique
- Interactive Mesh Fusion Based on Local 3D Metamorphosis
- Fitting Subdivision Surface to a Range of Points
- Detailed Triangular Mesh Modeling based on Local Surface Fitting Subdivision Method
- 3D Sketch: Sketch-Based Model Reconstruction and Rendering
- A method of generating developments of triangular Polyhedral Models

Basically he is working in the area of CAD/CAM and Reverse Engineering. His research interests are fit to the theme of our Institute and some faculty members here are also having interests in these areas. We had discussed the possibility of future collaboration with Institute as well as on personal level. I have introduced his work to some of our interested faculty members and also arranged their meetings when Prof Suzuki was here.

Personally I have discussed with him the possibility of joint project. I have shown him my work and he told me that a related problem he is having from industry side since long time but he was not able to make up his mind for that. I told him that I am ready to work on this problem. He has taken my presentation and told me that he will explore the possibility to write some joint project.

Professor Hori Lab

The research carried out at Professor Hori Lab is mainly in the following areas:

- Robotics
- Artificial Intelligence
- Application of AI in Astronomic Domain
- Technology to support Human Creative Activity
- Design of Space System
- NLP to support the Design of Artificial satellite.

I met him mainly to discuss the possibility of his contribution to our teaching and research programme in Artificial Intelligence. During the meeting he told about some specific problems on which he is presently working. He has designed a system to stimulate human brain for creative activities. He has given me details of that system. Again relevant with the IT and Design field of the Institute. On my request, Professor Nanya has included his name for delivering lectures to our students.

Professor Masaru Kitsuregawa Lab (Advanced Data Engineering Lab)

The work is mainly focused on the following topics:

- Search Technology for efficient retrieval of useful information from a huge data space
- Data Mining technology to extract interesting rules from huge volumes of data
- Data Visualization techniques to visualize huge volumes of data intelligibly.
- Advanced Database/Storage Management mechanisms to manage huge volumes of data

I made a presentation of my research work to him and Prof Kitsuegawa has found my project on Criminology very interesting. I am working on this project after the idea was floated by Prof Arvind Verma, Indiana University. Prof Kitsuegawa has discussed that project and its methodology in detail and given his consent to work on some joint project in future.

I also met there Dr Anirban Mandol from India, a post doc fellow in his lab. Dr Anirban Mandol has done his graduation and masters from IIT, Kharaghpur and his PhD from Singapore. I am in touch with him regarding future collaboration. Prof Kitsuegawa was very much aware with the IIITs as one of his Indian student is currently faculty in IIIT Hyderabad. Due to these two persons Prof Kitsuegawa is already having a good image of Indian students and he is keen to work with the Institute.

Professor Yoichi Sato Lab

The research interests of Prof Sato are:

- Reflectance analysis
- Physics-based vision
- Image-based modeling
- Tracking and gesture analysis
- Computer vision for HCI

Again Human Computer Interaction is a hot topic these days and it suits the IT and Design theme of our Institute. Prof Sato has shown his keenness to work together with our Institute.

Professor Kanta Matsuura Lab

The research interests of Prof Matsuura are:

- Cryptography
- Network Security
- Security Management
- E-Society Engineering

Professore Matsuura gave me lots of information on the work going on there and his three students presented their work before me. His work is suitable for IT and Design area. Prof Matsuura has already visited India some time back and he has shown his interest for offering any short term course on the above mentioned topics. I have conveyed this to Professor Nanya.

Professor Haruo Yokota Lab

The work is focused on the following topics:

- Data Engineering
- Database Technologies
- Dependable Storage Systems

Mainly he is a person of Database Technologies and for that he has also worked in the area of Data Structures. Presently I am taking these two courses in the Institute. He had answered to all my queries related with the handling of these two courses. After discussing on these two courses I was much satisfied to find that we are taking care of these courses in almost same way. Presently I am dealing with two projects related with Database Technologies. I have discussed these projects with him. He has agreed to help us in future also.

Professors Masayuki Nakajima and Suguru Saito Lab

The research carried out at Professor Nakajima Lab is mainly in the following areas:

- Image Processing and Information retrieval
  - Multimedia Information Retrieval
  - Human Computer Interaction
  - Facial Image Analysis and Application
    - Gender and Age Estimation
    - Non Identical facial recognition
    - Aging Transformation
  - Text Detection from Images
  - People Detection and Tracking with Networked Camera System
- Computer Graphics
  - Non Photorealistic Rendering
  - Oil Painting System
  - Animation and Virtual Agent
- Pattern Recognition

Unfortunately I could not meet Professors Masayuki Nakajima and Suguru Saito personally as there was a sudden change of programme. But Dr Hamid Laga, assistant Professor along with some doctoral students gave me details of all the work going on in their lab.

Dr Hamid Laga himself is working on Facial Image Analysis and Application and this is the area in which I am also interested and I have floated these research topics for our PG students. I am in touch with Dr Hamid Laga on these projects. Their query is for the frequency of our visits to Japan to carry on these communications further.

Professors Jun Adachi and Akiko Aizawa Group at NII

The research interests of Prof Matsuura are:

- Digital Library Systems
- Distributed Information Systems
- Data Engineering, Information Retrieval

Professor Jun Adachi is mainly involved in research and development of NII information systems. He has given me details for internship programme which I had passed to our students. Internship programme for 2008 will soon be displayed on their web site.

Dr Katsuaki Kawachi and Makiko Kouchi group at Digital Human research Centre

Looking at my interest in the Digital Human Modeling project, Professor Suzuki arranged my visit to Digital Human Research Center. The groups working in Digital Human Research Center are:

- Human Modeling Technology
- Humanoid Interaction Technology
- Enabling Environment
- Human Centered Design

Humanoid Interaction Technology group is working on generation of robot's whole-body motions based on the models of human motions as a process of motion transfer and verification. They are also working on 3D vision to recognize humans and environment for service applications. Human Modeling Technology group is working on Patient Simulator (Modeling of physiological responses in a locally anesthetized operation) and analysis and comparison between human walk and robot walk for better robot design to produce natural behavior.

The groups working in Digital Human Research Center are working exactly on our theme of IT, Design and manufacturing. I have met various groups and collected information for future collaboration. In my opinion we should further strengthen our relationship with Digital Human Research center as it is in the benefit of the Institute.

December 02, 2007 to December 15, 2007

Visit by Dr. Mukesh Roy, Assistant Professor, Physics

Visit: Japan visit for exposure towards research and collaboration with different universities of Japan

Visit date: December 1, 2007- December 15, 2007

Purpose of Visit:

- To strengthen and broaden the relationship of IIITDM JABALPUR with different universities of JAPAN
- To visit different universities of Japan and explore the possibilities toward research and collaboration in common areas of interest from,
  - Institute perspective
  - Personal research perspective
  - Students internship perspective
  - Students research perspective

Visit Itinerary

Date	Visiting Place	Host person
Dec, 1, 2007 (Sat)	Arrival at Tokyo	
Dec, 2, 2007 (Sun)	Free day	
Dec, 3, 2007 (Mon)	The University of Electro-Communication	Prof. M Murata Associate Prof. T Kuboki
Dec, 4, 2007 (Tue)	Amada (Industry visit)	
Dec, 5, 2007 (Wed)	The University of Tokyo	Prof. M Mitsuishi
Dec, 6, 2007 (Thur)	The University of Tokyo	Prof. M Mitsuishi
Dec, 7, 2007 (Fri)	The University of Tokyo	Prof. M Mitsuishi
Dec, 8, 2007 (Sat)	Free day	
Dec, 9, 2007 (Sun)	Free day	
Dec, 10, 2007 (Mon)	Nihon university	Prof. M Hoshino
Dec, 11, 2007 (Tue)	Tokyo Metropolitan University	Prof. M Yang
Dec, 12, 2007 (Wed)	Tokyo Metropolitan University	Prof. M Yang
Dec, 13, 2007 (Thur)	Shizuoka University	Prof. T Nakamura Associate Prof. K.

		Hayakawa
Dec, 14, 2007 (Fri)	Suzuki (Industry visit)	
Dec, 15, 2007 (Sat)	Departure fro Tokyo	

Dec. 1, 2007 (Saturday)

- As we came out from Narita Airport a person named Mr. Yasushi Ishida (consultant, Dept of Project Development & Implementation) was waiting for us to escort us to reach our hotel at Suidobashi.
- Glad to see Mr. Tokimasa Hirroka (Senior Deputy Director, MOFA) just at the out side of Hotel and was waiting to welcome us and we found a warm welcome.

Dec. 2, 2007 (Sunday)

- Free day and went for outing and roamed in the Electronic market (Akhiabara)

Dec. 3, 2007 (Monday)

- Prof. M. Kiuchi (Host of The Overall Tour) Visited to our hotel and discussed for 5 minutes on our schedule at Japan.

Visit of University of Electro- Communication:

(Dec. 3, 2007 (Monday))

- A very kind and gentle student of 2nd year master degree Programme of University of Electro- Communication named T. Muroi picked us from Hotel for University of Electro- Communication. T Muroi worked as guide for Dec. 3 and Dec 4, 2007.
- We received a very warm welcome at Prof. Murata's Lab (at University of Electro-Communication (Mechanical Engineering & Intelligent Systems)) by Prof. M. Murata and Prof. T. Kuboki.
- At Prof. Murata's Lab Prof. T. Kuboki gave a talk on some theoretical aspect of sheet metal forming, it was a good talk but personally I received a little as it was hardcore mechanical engineering related. After that Prof. Murata Presented his talk and talked about bending CNC machine whose idea was perceived by him and marketed by a company and successfully its third generation CNC machine is in the market. Two students of Prof. Murata's lab (Including Mr. T Muroi) have also presented their talk. After that we have visited some of the Mechanical Engineering labs and had a good discussion with the Faculty members and Students

- Prof. Murata was our host and did a lot to arrange visit at different labs and would like to put our kind acknowledgment for his effort.
- In summary at University of Electro- Communication we found that there were several well equipped labs where strong Research Groups (where faculties and students work together) were well coupled with industries. Most of the research works were directed towards the application and demand of industries.

Recommendation:

Prof. Murata's lab is good for mechanical engineering students and will be ideal for

- Mechanical engineering students internship
- Mechanical engineering students research

Visit of Amada (Industrial Trip):

(Dec. 4, 2007 (Tuesday))

- The visit of Amada industry was organized by Prof. Murata and again in this trip my guide was Mr. T Muroi.
- At Amada we received a very warm welcome from senior officials like Mr. N Orita (Director, Research and Development), Mr. K Matsumoto (President and CEO Amada India), Mr. J Koyama (Developing Manager, Advanced technology development dept.), Dr. J Yingjun (Software development dept.) Mr. P Thanapandi (Software planning dept.) etc.
- With the help of personnel manager Mr. J Koyama and along with Mr. K Matsumoto, Dr. J Yingjun, Mr. P Thanapandi etc. We did a comprehensive visit of Amada sheet Metal work at that manufacturing site. They explained quite well and talked simply from perceiving the ideas to make it possible for final product realization. All most every manufacturing unit was coupled with robot and learned a good utility and functionality of robots.
- We found really an excellent work environment at Amada campus
- After visit we talked about exploring joint collaboration between our Institute and Amada Japan and gave a thrust to provide opportunity to our students during internship and other project work. We received a positive response on these issues.
- In summary at Amada we found that this was really a well maintained completely robotized place for sheet metal work with a very healthy manufacturing atmosphere.

Recommendation:

Amada is good for mechanical engineering students and will be ideal for

- Mechanical engineering students internship

Visit of University of Tokyo:

(Dec. 5, 2007 (Wednesday))

- A Lecturer from University of Tokyo (Department of Engineering Synthesis, School of Engineering) named Mr. Koizumi Norihiro picked us from Hotel for University of Tokyo. Mr. Koizumi Norihiro worked as a guide in-between Dec. 5 to Dec 7, 2007.He is working in Nano Bioengineering Education Program.
- At University of Tokyo our host was Prof M. Mitsuishi (Dept. of Engineering Synthesis School of Engineering). He was a quite nice and gentle man and briefly discussed about his research interest and received some of his recent publication. He was very busy on that very date as he had to go to Osaka to Give a talk. From discussion we found that he is working in a very diverse area, Although he is a faculty member in mechanical engineering but have a good hold in Nano-Bio integration.
- Next we have visited Prof. Nakao's Lab (escorted by Mr. Nagato a Ph. D Student) which was a nano fabrication lab and this lab was well equipped with high ends nano preparation and characterization equipments like High Vacuum E-beam system, PLD System, CVD System, etc for nano fabrication, SEM HRTEM, SPM, etc. for nano characterization. We discussed something about preparation and characterization of nanotube with Mr. Nagato. Negative part was we were not able to meet Prof Nakao.
- In summary we found an excellent vibrant research environment at Nakao's lab

Dec. 6, 2007 (Wednesday)

- With our Guide Mr. Koizumi Norihiro we have visited to Prof Matsumoto Lab., Department of Mechanical Engineering who is working on fluid mechanics. There we found lecturer Yoshinaka and gave a theoretical work presentation on fluid mechanics for porous media.
- After that our host Prof M. Mitsuishi was there at his lab and visited with him his lab. In one of his lab which was basically related to Nano-Bio Integration where I saw a robot in the Master and Slave mode which could be used to bone cutting precisely.
- On the same day I have also visited another lab of Prof M. Mitsuishi, which was precision based lab and this lab was well equipped with a mixture of some old and some new instruments

- In summary we visited two excellent vibrant research lab of Prof M. Mitsuishi. The work culture at Prof. M. Mitsuishi was admirable.

Dec. 7, 2007 (Thursday)

- In the first half we visited (With our Guide Mr. Koizumi Norihiro) again another lab of Prof M. Mitsuishi, which was basically related to Nano-Bio Integration but this lab was situated at Medical Hospital and this was a lab of neurosurgery where I saw a student was trying to dissolve stone. This lab had also a robot in the Master and Slave mode to do neuro-surgery.
- After that in the 2nd half we started our journey from Prof. Higuchi's (Dept. of Precision Engg.). Prof. Higuchi himself presented about his lab. The lab was quite rich full of equipments and did a lot of work on electrostatic actuators. Prof. Higuchi was well connected with different industries and had a lot of patents on his credit. This lab will be a good lab for our students to learn more about different types of actuators etc.
- After that we visited to a quite young and very dynamic personality Associate Prof. S. Takahashi working on nano-optics. He was very nice to talk and doing a very good job in nano-optics for nano particles. We had a discussion with Prof S. Takahashi to have collaboration and he was positive in this regards so I would like to propose that a collaboration with his lab will be beneficial to our Institute. I am exploring the possibility to do so.
- After that we visited again to a quite young and very dynamic personality Associate Prof. Warisawa working on nano-mechanics. He was again very nice to talk and doing an excellent job in nano-mechanics. From monetary side it appeared that his lab was poor but doing works utilizing different labsand giving a good result. He was also working on some new instruments like focused ion beam etc. During the talk it came to know that he is a student of Prof ITO and most probably he will visit our institute in coming September (as was told to him by Prof ITO) to take some classes for our students. We had a discussion with Prof. Warisawa to have collaboration and he was positive in this regards so I would like to propose that a collaboration with him will be beneficial to our Institute. I am exploring the possibility to do so in this regard.
- In summary we had visited different labs but from my point of view research group of Associate Prof. S. Takahashi and Associate Prof. Warisawa were quite valuable (from nano point of view) and association of these two persons with our

institute will be fruitful and I am trying to explore possibility towards collaboration with these persons.

- Prof. Mitsuishi was our host during University of Tokyo and did a lot to arrange visit at different labs and would like to put our kind acknowledgment for his effort.

Recommendation:

Prof M. Mitsuishi's lab is good for precision engineering and for Nano-Bio integration and will be ideal for

- Institute Collaboration
- Students internship
- Students research

Prof Nakao's lab is good for Nano engineering (highly Recommended) and will be ideal for

- Institute Collaboration
- Students internship
- Students research

Prof Matsumoto's lab is good for CFD and will be good for

- Students research

Prof Higuchi's lab is good for actuators and will be good for

- Institute Collaboration
- Students internship
- Students Research

Prof Takaashi's lab is good for nano-optics and for Nanoscience (highly Recommended) and will be ideal for

- Institute Collaboration
- Students research
- Personal Research collaboration

Prof Warisawa's lab is good for nano-mechanics and for Nanoscience (highly Recommended) and will be ideal for

- Institute Collaboration
- Students research
- Personal Research collaboration

Dec. 8, 2007 (Saturday)

- Free day

Dec. 9, 2007 (Sundayday)

- Free day

Visit of Nihon University:

(Dec. 10, 2007 (Monday))

- Our Host for Nihon University (A private university), Prof Hoshino Himself arrived to pick us for the University Visit. At University Prof Hoshino briefed about Nihon University and after that short presentations were given by graduate students about on going research at Hosino's lab. After that we visited Hoshino's lab and visited different campus of the Nihon University. At last we had an experience of driving simulator which was quite enjoyable.

Visit of Tokyo Metropolitan University:

(Dec. 11, 2007 (Tuesday))

- A very kind and gentle student of master degree Programme of Tokyo Metropolitan University picked us from Hotel for Tokyo Metropolitan University.
- At Tokyo Metropolitan University our host was Prof M. Yang (Graduate school of System Design). He was a quite dynamic and very helpful man and discussed elaborately about his on going research and received some of his recent publications. From the discussion we inferred that he is working in diverse areas which include nano channeling nano-tubes, micro punch and is working on a lot of industrial projects. We Visited his lab and found that it was well equipped with micro nano synthesis and characterization tools like MBE. Ion Beam System, CVD System, Optical Lithography, Electron lithography etc for nano and Micro Synthesis, SEM, SPM, micro punch etc. for nano-micro characterization. We have also visited "clean rooms" for nano fabrication. We discussed about preparation of nanotubes. This is a very good micro nano mechanical engineering lab and we were highly impressed with the work culture and involvement of Prof Yang in the Lab.

Dec. 12, 2007 (Wednesday)

- Again this was a day devoted to Tokyo Metropolitan University and our host Prof M. Yang remained again full time with us and learned more about hands on activities going on in his lab. This was an excellent place to work with a quite dynamic personality"Prof M Yang".

- Prof. M Yang arranged a visit for "Elionix" company which was basically an company to manufacture SEM, TEM, Electron lithography, AFM etc. this was a small company but doing all R &D related to nano Characterization.
- In summary we found an excellent vibrant research environment at Prof Yang's lab and will be ideal to have collaboration.
- Prof. M Yang was our host during Tokyo Metropolitan University and spent almost full time with us during our visit and really did a lot for us and would like to put our kind acknowledgment for his best effort.

Recommendation:

Prof M. Yang's lab is very healthy for nano engineering (highly Recommended) and will be best for

- Institute Collaboration
- Students internship
- Students research
- Personal Research collaboration

Visit of Shizuoka University:

(Dec. 13, 2007 (Thrusday))

- After Covering a long distance from Tokyo City (3 hrs Shinkansen trian journey) we arrived at Hamamatsu station where our host Associate Prof. K. Hayakawa was waiting and came directly to the Shizuoka university with him.
- At University Prof Hayakawa briefed about Shizuoka university and after that short presentations were given by graduate students about on going research at Hayakawa's lab. After that Prof Hayakawa arranged visit for other labs.
- We visited Prof A Nakayama office who was working on porous silicon and talked about 30 minutes on different aspects including IIITDM Jabalpur mission and visions.
- After that short presentations were given by graduate students of different labs about on going research at their labs (Mostly on hardcore mechanical)
- Finally we arrived at Associate Prof F Iwata lab with Dr. Y Kubota. This lab was really an exciting lab on nanolithography. We were amazed by see to make the nano tube from glass capillary for nano writing. Different types of hand made

AFMs were there in his lab. His lab was quite vibrant and having a very active research group. This was really in influensive lab on nano lithography.

- In summary we found an excellent vibrant research environment at Prof Iwata's lab and will be ideal to have collaboration.

Recommendation:

Prof F Iwata lab's is good for nanolithography (highly recommended) and will be ideal for

- Institute Collaboration
- Students internship
- Students research
- Personal Research collaboration

association of Prof F Iwata with our institute will be fruitful and I am trying to explore possibility towards collaboration with him.

Visit of Suzuki (Industrial trip):

(Dec. 14, 2007 (Friday))

- The visit of Suzuki industry was organized by Prof. Hayakawa and he came with us to Suzuki company and helped us a lot.
- At Suzuki entrance gate we met S. Yokoyama (Deputy Staff Manager) who was waiting for us along with an India girl (bilinguals, fluent in Japanese and English).
- With the help of a guide We did a comprehensive visit of Suzuki car assembling site. They explained quite well and talked in Japanese but Prof. Hayakawa and Indian girl helped us to understand things easily. All most every assembling unit was coupled with robot and learned a good utility and functionality of robots.
- We found really an excellent work environment at Suzuki campus
- After visit we talked about exploring relationship between our Institute and Suzuki Japan and gave a thrust to provide opportunity to our students during internship and other project work.
- In summary at Suzuki we found that this was really a well maintained company from every aspect.

Recommendation:

Suzuki is good for students and will be ideal for

- students internship

Prof. Prof. Hayakawa was our host during Hamamatsu trip and spent almost full time with us during our visit and did a lot for us and would like to put our kind acknowledgment for his effort.

Dec. 15, 2007 (Sartuday)

- Departure from Tokyo To delhi

Final Remark:

From my perspective the tour was successful (worth 100%). Here I have recommended some of the labs/industries where we can explore the possibilities of collaboration and I can assure that association with them will be quite fruitful to our Institute. Once again I would like to thank our wonderful Hosts at different University. Finally, I would like to thank Prof M Kiuchi, and Mr. Hirroka for their kind efforts to arrange such a wonderful memorable academic trip.