

TEQIP-II Sponsored Short Term Course  
on  
**COMPUTER VISION AND PATTERN RECOGNITION**

June 16 - 20, 2014



**Course Coordinators:**

Dr. Debashis Nandi (Department of IT)  
Dr. Mrinal Kanti Mandal (Department of Physics)  
Dr. Baisakhi Chakraborty (Department of IT)

National Institute of Technology Durgapur  
Mahatma Gandhi Avenue  
Durgapur 713 209

## THE INSTITUTE

National Institute of Technology Durgapur (NITD) is a leading technical institute offering undergraduate, postgraduate and doctoral programmes in various disciplines of engineering, technology, science, social science and management. The education system is holistic with equal importance being attached to all-round development of the students. NITD was established as a Regional Engineering College (REC) in 1960 as a joint venture of the Government of India and Government of West Bengal. REC Durgapur was converted to NIT Durgapur under the full administrative and financial control of the Ministry of Human Resource Development of Government of India with a Deemed University status on 3rd July, 2003. Subsequently NITD has been given the status of a University by the UGC Act. The Institute was declared an **Institute of National Importance** by the Government of India on August 15, 2007.

The city of Durgapur is recognized as one of the fastest developing Tier-II cities in the national scenarios. Durgapur is situated at a distance of about 180 KMs from Kolkata. It is located right on the major railway and expressway (NH-2) connecting Kolkata to Delhi and Durgapur can be reached from Kolkata (and vice versa) in ~ 2 hrs. 30 mins.

## THE DEPARTMENT

Department of Information Technology of NIT Durgapur is one of the new and leading Departments in terms of teaching qualities and research activities. The department has been offering undergraduate course in IT since 2000. Within a very short span of time, the department has created an excellent learning environment with dedicated young faculty members, technical staff, 'state-of-the-art' laboratories and innovative academic processes. The department provides computational facilities for system level programmers, application development and research. The Department, over the years, is successfully undergoing several projects sponsored by the Department of Information Technology, Government of India. A number of students are working at present for their Ph.D. degrees undergoing research under supervision of several faculties. Theoretical and experimental investigations are being carried out in the frontier areas like Modeling & simulation of Networks, Optical Burst Switched Network, Distributed Systems, Wireless Networks, Knowledge Management, data mining and Case based reasoning, Swarm Robotics, Soft computing, cryptography and network security, VLSI testing, distributed computing, software engineering, image processing, algorithms and applications, chaos and security, bioinformatics and several other allied and interdisciplinary domains.

The department has been offering post graduate course since 2008.

Many students who have received their M.Tech degrees from this Department are serving now in different Institutes of higher learning in India.

## ABOUT THE SHORT TERM COURSE “COMPUTER VISION AND PATTERN RECOGNITION”

**Computer vision** is a field that includes methods for acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world in order to produce numerical or symbolic information, e.g., in the forms of decisions. Computer vision accomplish this through the a series of tasks like Object Pattern recognition, Identification, Detection, Content-based image retrieval, Pose estimation, Optical character recognition, 2D Code reading, Facial recognition etc.

Computer vision covers a gigantic application area which includes automatic medical diagnostic systems, navigation, industrial automation, machine vision, military applications, autonomous vehicles, unmanned aerial vehicles, unmanned land vehicles, space technology and many more. In **medical diagnosis**, computer vision helps to extract information from image data for the purpose of making a medical diagnosis of a patient. The image data in medical diagnosis is in the form of microscopy images, X-ray images, angiography images, ultrasonic images, and tomography images. Another important application is **machine vision**, where information is extracted for the purpose of supporting a manufacturing process. it is used in quality control, optical sorting, in agricultural process to remove undesirable food stuff from bulk material. **Military applications** are probably one of the largest areas for computer vision. The advanced systems for missile

guidance send the missile to an area rather than a specific target, and target selection is made when the missile reaches the area based on locally acquired image data. Modern military concepts, such as "battlefield awareness", imply that various sensors, including image sensors, provide a rich set of information about a combat scene which can be used to support strategic decisions. One of the newer application areas is **autonomous vehicles**, which include submersibles, land-based vehicles, aerial vehicles, and unmanned aerial vehicles. Fully autonomous vehicles typically use computer vision for navigation, i.e. for knowing where it is, or for producing a map of its environment and for detecting obstacles.

The objectives of the short term course is to bring researchers and technocrats from different parts of our country to a common gathering for exchanging and sharing the recent developments in computer vision and pattern recognition systems and their applications in several areas.

### TOPICS TO BE COVERED

- Digital Image Reconstruction and Processing
- Video processing,
- Video and Image coding,
- Pattern recognition,
- Pattern Classification,
- Applications of pattern recognition and Classification
- Optical Character Recognition
- Content-based image retrieval

### RESOURCE PERSONS

The resource persons constitutes experts/senior faculty members from NIT Durgapur and various guest speakers from other reputed institutions and industries including ISI, BESU, IIT, Industries, Research Institutes, etc.

### WHO CAN ATTEND THE COURSE

The course is aimed to attract and bring together Faculty Members, Scientists, Engineers, Technologists, Technical Staffs, Technical Assistants, Research Scholars and Final Year UG/PG students from Academic and Research Institutions and Industries. The participants will be benefitted immensely and will get new insights and knowledge about the topic through close interactions/discussions with the Senior Faculty Members/Scientists and Experts of the respective field during the lecture sessions as well as in some laboratory sessions.

### BOARDING & LODGING

Boarding, lodging and travel expenses shall be borne by the participants. Several good hotels are available in and around Durgapur. Participants may contact directly or through the coordinator(s) for accommodation in Hotels.

### REGISTRATION FEES

Participants	Up to April 2014	After April 2013
Faculty/Staff Member of Academic/ Research Institutes	Rs. 2500/-	Rs. 3500/-
Research Scholars & Students	Rs. 2000/-	Rs. 3000/-
Members from Industries	Rs. 5000/-	Rs. 8000/-

**There will be no registration after 31<sup>st</sup> May 2014.** *Registration fee includes study/lecture materials, refreshment and lunch for 5 days during the course.*

**Patron:**

Prof. T. Kumar, Director, NIT Durgapur

**Advisory Committee:**

Prof. P. P. Gupta, Dean (R&C)

Prof. K. C. Ghanta, Coordinator TEQIP-II

Prof. B. Halder, Nodal Officer (Academic) TEQIP-II

Col. (Retd.) P. S. Sandhu, Registrar

**Course Coordinators:**

Dr. Debashis Nandi (Dept. of IT)

Dr. Mrinal Kanti Mandal (Dept. of Physics)

Dr. Baisakhi Chakraborty (Dept. of IT)

**Members:**

Dr. Subhrabrata Choudhury

Dr. Sajal Mukhopadhyay

Dr. Debashis Mitra

Dr. Animesh Dutta

Mrs. Dipanwita Das

Mr. Jaydeep Howladar

Mr. Subhankar Majhi

Mr. N. D. Jana

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**NATIONAL INSTITUTE OF TECHNOLOGY, DURGAPUR**  
**Department of Information Technology**  
**M.G. Avenue, Durgapur – 723109, West Bengal**

**REGISTRATION FORM**

**TEQIP-II Sponsored One Week Short Term Course on**  
**COMPUTER VISION AND PATTERN RECOGNITION**  
**June 16 - 20, 2014**

1. Name: -----
2. Designation & Affiliation: -----
3. Male/Female:-----
4. Mailing Address:-----
5. Telephone No.: \_\_\_\_\_ & \_\_\_\_\_ ( M)
6. E-mail ID : -----
7. Highest Academic Qualification:-----
8. Working Experience (In nos. of Years): -----
9. Accommodation required\* (Y/N):-----
10. Registration fees: DD/Cheque No. \_\_\_\_\_ Date \_\_\_\_\_ Amount \_\_\_\_\_  
(Account Transfer/DD/Multi City Cheque should be drawn in favor of “NITD IT PHY”, payable at Durgapur.)  
A/C Name: **NITD IT PHY** A/C No. **33154858334** IFS Code: **SBIN0002108**
11. Vegetarian / Non-Vegetarian: -----

Place: \_\_\_\_\_  
Date: \_\_\_\_\_

*Signature of the Applicant*

*Signature and Seal of the Head of the Department/Institute*

***N.B.: Please ensure that all the fields (1 to 11) are properly filled-in and then duly signed. Photocopy of this form may also be used for registration. Please send the completed application form together with the scanned copy of the demand draft to the Course Coordinator by E-mail.***

**CORRESPONDING ADDRESS**

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