

MHRD Scheme on Global Initiative on Academic Network (GIAN)

ONE WEEK SHORT TERM COURSE

ON

PATTERN RECOGNITION WITH APPLICATIONS

Overview

The main aim of this course is to nurture a deep understanding of the fundamental principles of classical statistical pattern recognition, leading on to advanced convolutional neural networks. The module will cover broad theoretical topics such as Bayesian decision theory, linear discriminant functions, non-parametric density estimation, clustering analysis, and feature selection. We will cover fundamentals and also learn about the recent research in the area of pattern recognition, such as ensemble classifiers, dictionary construction from a given set of training data, visual words for fast detection of objects in video sequences, and application to images acquired with mobile cameras. If time permits, we will also cover applications of pattern recognition in the medical domain, for example detection of tumour areas and recognition of specific kind of cells in microscopic images of cancerous tissue.

The proposed course presents advanced level course on pattern recognition with applications. It also highlights successful applications of pattern recognition algorithms in areas of video processing as well as microscopic images analysis and contains sessions for the participants who may not have a strong background in the field. The purpose of the 5 days' advance level course is to provide an intensive understanding of how to use the pattern recognition algorithms and to equip the participants with software tools for solving the Tutorial problems.

Module	PATTERN RECOGNITION WITH APPLICATIONS Duration: 30-10-2017 to 03-11-2017 Maximum number of participants for the course = 50		
Day 1 (30.10.2017)	Lecture 1	Introduction to pattern recognition	1 Hour
	Lecture 2	Bayesian decision theory	1 Hour
	Tutorial 1	Introduction to pattern recognition and Bayesian decision theory	2 Hour
Day 2 (31.10.2017)	Lecture 3	Linear discriminant functions	1 Hour
	Lecture 4	Non-parametric density estimation	1 Hour
	Tutorial 2	Linear discriminant functions and non-parametric density estimation	2 Hour
Day 3 (01.11.2017)	Lecture 5	Clustering analysis	1 Hour
	Lecture 6	Feature selection	1 Hour
	Tutorial 3	Clustering analysis, and feature selection	2 Hour
Day 4 (02.11.2017)	Lecture 7 and Lecture 8	Advanced research topics in the area of pattern recognition such as ensemble classifiers, dictionary construction	2 Hour
	Tutorial 4	Advanced research topics in the area of pattern recognition such as ensemble classifiers, dictionary construction	2 Hour
Day 5 (03.11.2017)	Lecture 9	Application of pattern recognition algorithms in the video processing	1 Hour
	Lecture 10	Application of pattern recognition algorithms in the microscopic image analysis	1 Hour
	Tutorial 5	Application of pattern recognition algorithms in the video processing and Microscopic Image analysis	2 Hour
Date of Examination:	MCQ Type Test	3rd November, 2017	1 Hour
Who can attend	<ul style="list-style-type: none"> Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. Students at all levels (B.Tech/MSc/M.Tech/Ph.D) or Faculty from reputed academic institutions and technical institutions. 		
Registration process and Fee	<ul style="list-style-type: none"> The applicant are required to get themselves register on GIAN web portal (http://www.gian.iitkgp.ac.in) to apply for any number of GIAN courses as and when necessary. The course registration fee is separate. The participation fees (Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal for taking the course is as follows: The participation fees for taking the course is as follows: Participants from abroad : US \$500 		

Industry/ Research Organizations: Rs 8000
Faculty Members from Academic Institutes: Rs 5000
Students/Research Scholars: Rs 2500

- The above fee include all instructional materials, computer use for tutorials and Assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation, if available, on payment basis.

Foreign faculty: Prof. Nasir Rajpoot

Nasir Rajpoot is Professor in Computer Science at the University of Warwick.



He also holds an Honorary Scientist position at the Department of Pathology, University Hospitals Coventry & Warwickshire NHS Trust. He received his PhD in digital image processing from the University of Warwick in 2001. During 1998-2000, he was a postgraduate research fellow in the Applied Mathematics program at Yale University, USA. Prof Rajpoot is the founding Head of Tissue Image

Analytics lab (formerly known as the BioImage Analysis or BIA lab) at Warwick since 2012. Current focus of research in his lab is on developing algorithms for the analysis of large multi-gigapixel digital pathology images, with applications to computer-assisted grading of cancer and image-based markers for prediction of cancer progression and survival. His group won the MITOS-ATYPIA challenge contest on nuclear atypia scoring in breast cancer histology images held in conjunction with ICPR'2014, and was ranked among the top three contestants in the AMIDA challenge contest on mitotic cell detection in breast histology images held in conjunction with MICCAI'2013. Recently, a paper by his lab on the detection of epithelial tumour cells in cancer histology images won the Best Paper award at the Patch-based Medical Imaging (PMI) workshop held in conjunction with MICCAI'2015. Prof Rajpoot has co-chaired several meetings in the area of histopathology image analysis (HIMA) since 2008. He was the General Chair of the UK Medical Image Understanding and Analysis (MIUA) conference in 2010, and the Technical Chair of the British Machine Vision Conference (BMVC) in 2007. He has guest edited a special issue of Machine Vision and Applications on Microscopy Image Analysis and its Applications in Biology in 2012, and a special section on Multivariate Microscopy Image Analysis in the IEEE Transactions on Medical Imaging in 2010. He is a Senior Member of IEEE and member of the ACM, the British Association of Cancer Research (BACR), and the European Association of Cancer Research (EACR).

Host Faculty



Shyam Lal received B.Tech (with Hons.) in Electronics and Communication Engineering from Bundelkhand Institute of Engineering & Technology (Govt. Engg. Institute) Jhansi (U.P.), India and M.Tech (with Hons.) in Electronics and Communication Engineering from National Institute of Technology, Kurukshetra

(Haryana), India in year 2001 and 2007, respectively and his Ph.D. degree in Electronics & Communication Engineering from Department of Electronics & Communication Engineering, Birla Institute of Technology, Mesra, Ranchi (Jharkhand), India in 2013. He was starting teaching career in the department of Electronics & Communication Engineering, Moradabad Institute of Technology, Moradabad (U.P.), India since 2001. He was promoted to Associate Professor in 2009 and left institute on 14th December 2013.

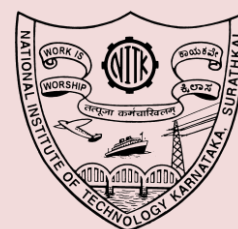
He is working as Assistant Professor in the department of Electronics & Communication Engineering, National Institute of Technology Karnataka, Surathkal, Mangalore (Karnataka), India since 18th December 2013. He has more than 15 years of Teaching & Research experience. He has published more than 50 research papers in the area of Digital Signal & Image Processing and Wireless Communication & Computing at International/National Journals & Conferences. He has been Guest Editor of IJSISE, Inderscience Publishers. He is Member of IEEE, life member of ISTE, New Delhi, India, Life member of IAENG, Hong Kong and Life member of IACSIT, Singapore. His area of interest includes Digital Image Processing, Remote Sensing Image Processing, Medical Image Processing, Application of Optimization Algorithms in Signal Processing and Image Processing.

One Week Short Term Course

on

PATTERN RECOGNITION WITH APPLICATIONS

Organized by



Department of Electronics &
Communication Engineering,
National Institute of Technology
Karnataka, Surathkal

Supported by



GIAN

(Global Initiative on Academic Networks)
MHRD, GOVT. OF INDIA

Duration: 30-10-2017 to 03-11-2017

Venue: NITK Surathkal, Mangaluru

Contact Address:

Dr. Shyam Lal

Course Coordinator

Department of Electronics and
Communication Engineering,
National Institute of Technology
Karnataka, Surathkal, Mangaluru-
575025 (Karnataka), India

Tel: +91-824-2473522

Mob. : +91-9741072082

Email: shyamfec@nitk.ac.in,

National Institute of Technology Karnataka, Surathkal
MHRD Scheme on Global Initiative on Academic Network (GIAN)

ONE WEEK SHORT TERM COURSE

ON

“PATTERN RECOGNITION WITH APPLICATIONS”

Duration: 30-10-2017 to 03-11-2017

Registration Form

1. Name of applicant:-----

2. Designation & Department:-----

3. Mailing Address: -----

4. Tel: (Réidence):-----

(Mobile):-----

(Office): -----

5. Email:-----

6. Qualification:-----

7. Experience: Teaching:-----

and Industrial:-----

8. Comment on your exposure: -----

9. Fee Payment Details

Amount Rs: -----Demand Draft No. : -----

Bank: -----and Date: -----

10. Category of participants:

Faculty/Student/Research scholar of NITK

Faculty/Student/Research scholar of Outside NITK

Industry/Research Organizations

11. Require accommodation Facility? : Yes / No

I agree to abide by the rules and the regulations governing the GIAN–MHRD Course and I will attend the course for entire duration.

Place:

Date:

Signature of the applicant

Note:1. Filled registration form with Demand Draft should be send to the course coordinator.

2. Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal