

• About Prof. Dr. Francois Malgouyres

Malgouyres is currently a professor in the Institute of Mathematics of Toulouse, Faculty of Science and Engineering, Universite Paul Sabatier, France. Dr. Malgouyres completed his Ph.D in 2000 in the filed of image processing from CMLA, France under the supervision of Prof. Jean-Michel Morel and Prof.



Bernard Rougé. He has published several scholarly research articles in various internationally reputed journals and selected conferences. Before joining the university of Paul Sabatier he had worked as a CAM Assistant Professor in the Department of Mathematics UCLA. He had served in various roles such as Deputy member of the CNU, deputy director of FREMIT etc. He also serves as the member in various reputed scientific councils and societies. His areas of research interest include mathematical methods in image processing, numerical algorithms for image processing, variational models in imaging and image processing etc.

• About Host Faculty Dr. Jidesh P

Dr. Jidesh P. Completed his Ph.D. degree in Image restoration from National Institute of Technology Karnataka. Presently he is working as an Assistant Professor in the Department of Mathematical and Computational Sciences, National Institute of Technology, Karnataka. His areas of research interest include mathematical imaging and image processing. He has published several papers in reputed international journals and conferences.



For details please contact

Dr. Jidesh P.

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✓ About NITK

Since its inception in 1960, the National Institute of Technology Karnataka (NITK), Surathkal has established itself as a premier Institution engaged in imparting quality technological education and providing support to research and development activities. NITK is conferred the status of an Institution of National Importance vide NIT Act No. 29 of 2007 by Govt. of India and is consistently ranked as one of the top ten technical institutions in India. Presently, NITK offers 9 Bachelors, 28 Master's and Doctoral Degree programmes. The institute is located 22 kilometers north of Mangalore City along the Kanyakumari-Mumbai National Highway-66, amid 300 acres of sylvan surrounding with the picturesque Western Ghats on the east and sun-kissed sands of the Arabian Sea to the west. NITK is committed to enhance capabilities and potential of our human resources with the objective of transforming them into leaders in their chosen areas of interest. Our vision is to strive for excellence, be globally competitive in technical education and focus on knowledge assimilation, generation and dissemination. The year-long activities during the occasion show cased the glorious contributions of NITK in various fields of its activities and projected new initiatives for the coming years.

✓ Dept. of MACS

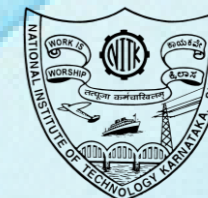
The Department of Mathematics (today called, the Department of Mathematical and Computational Sciences) started along with the institute (1960). The department initially catered to the needs of the UG and PG Engineering Mathematics and subsequently, in 1988-89, introduced two PG programmes, namely, the Master of Computer Applications (MCA) and Master of Technology (M.Tech.) in Systems Analysis and Computer Applications. In 2003, the department started the regular Doctoral Programmes in Mathematics and Computer Applications. The Department has started the M.Tech in Computational Mathematics (CMA) in 2014 in place of the earlier M.Tech (SACA).



GLOBAL INITIATIVE OF ACADEMIC NETWORKS

5 Days Course on
MATHEMATICAL METHODS FOR IMAGE PROCESSING
(23rd -27th October 2017)

Under the aegis of



Department of Mathematical and Computational Sciences
National Institute of Technology Karnataka, Surathkal

www.nitk.ac.in



Overview

Imaging and image processing has taken a considerable lead in the contemporary scientific world due to its capability to cater to a wide range of applications in today's technical world. Mathematical methods are inevitable to deal with digital images as these images are stored as matrices on storage devices. The literature on the subject is abundant and addresses various inverse problems such as image restoration, segmentation, registration and analysis in various contexts. Image restoration, for instance, encompass many applications such as denoising, deblurring, de-mosaicking, compressed-sensing/reconstruction, inpainting, restoration of compressed or quantized images . . . and is of key importance because it can be applied to many kind of images (natural, medical, remote sensing, biological, astronomical . . .).

Among the wide range mathematical frameworks the models based dimensionality reduction technique are of a particular importance. They either rely on well-chosen transforms (such as Fourier, wavelet, curvelet . . .) or calculus of variation or both. For years, many variational models have (empirically) reached state of the art performances on many such applications. They often rely on strong theoretical guarantees (such as the non-linear approximation and compressed sensing theorems). Their resolution requires constructing and studying of efficient numerical algorithm for performing the minimization. To be efficient, these fast algorithms need to exploit the rich geometrical structures of these problems and the numerical constraints.

The course is expected to cover the fundamentals concepts in imaging and image processing transforms and variational models. Various optimization techniques (designed to solve smooth or non-smooth problems) will be presented. The general guideline for designing restoration models will be provided. In particular, various regularization methods will be discussed and analyzed during the course. Practical examples such as denoising, deblurring and inpainting, will be entirely studied in all their details during the hands-on sessions. The foundations of the theoretical justifications will be presented.

The course is expected to provide the participants with an adequate exposure to the mathematical concepts for solving the real-world image processing problems using variational framework. Students and researchers from various disciplines such as computer science, electronics engineering and mathematical sciences are being expected to attend the course and get benefited from the same.

Objectives

The primary objectives of the course are as follows :

1. Exposing participants to the fundamentals aspects of the modeling, the theoretical justification and numerical resolution in image processing .
2. Providing adequate preliminary inputs to understand the concepts required for analyzing the theory behind the problem .
3. Extending the theoretical concepts towards applications and providing hands on experience in solving real world problems .
4. Building in confidence and capability amongst the participants in the application of the methods in other relevant areas in science and engineering like robotics, computer vision etc .

Course duration	23rd to 27th October, 2017
Host Institute	National Institute of Technology Karnataka, Surathkal
Maximum number of participants	60
Who should attend?	Faculty, scientists, researchers from industry and students working in various science & engineering disciplines like computer science, electronics and communication, computational methods, applied mathematics etc. . . .
Course Registration Fee	Faculty, academic staff : Rs. 4000 Persons from industry: Rs. 6000/- Students: Rs. 1000/- Foreign Participants: US \$200 This registration fee includes instructional materials, use of computers for lab and tutorial purpose and inter-session refreshments. Participants are advised to make arrangements for their stay during the course. The DD should be drawn in favour of the Director, NITK Surathkal. Payable at Surathkal. Participants from NITK need not pay the course registration fee.

Important dates:

Last date for online registration at GIAN and GOOGLE-Form sites: 03rd October, 2017

Date of notification for the selected participants (e-mail): 05th October, 2017

GIAN sponsored Course on Mathematical Methods for Image Processing

(23rd-27th October 2017)

Registration Form

Interested participants should first register in GIAN website at <http://www.gian.iitkgp.ac.in/GREGN/index> and online at [Registration-link](#) before sending this filled form.

1. Name of the participant _____
2. Designation _____
3. Name of the institute/organization (presently working) _____
4. Academic program (for students) _____ (eg : B.Tech, M.Tech., Ph.D)
5. Branch of study /Department _____ (eg. Computer Science, Electronics, Information Technology etc.)
6. Highest qualification _____ (eg : B.Tech, M.Tech, Ph.D. etc)
7. Area of research interest _____ (eg : Image processing, signal processing, numerical analysis etc.)
8. Age (as on date of registration) _____
9. Email Address _____
10. Mobile Number _____
11. Postal address with PIN code _____

12. DD No. amount and Date _____ (eg. No. 56789, Rs. 5000, Dt. 25/08/2017 (see brochure for the details of Registration fee and other details) send DD along with this registration form through speed-post/courier to Dr. Jidesh P. (the coordinator), *write your name and address on the reverse side of the DD *)

Declaration

I declare that I have read and understood the brochure and regulations of the GIAN course and that I will attend the course completely. All the details provided above are true to best of my knowledge.

Signature of the participant

Forwarding letter

This is to certify that Mr./Ms./Dr./Prof. _____ is working as _____ (designation) in this institute/department and the institute welcomes his participation in the GIAN programme organized by NITK Surathkal.

Date :

Signature of the Head of the institute/HOD

Place :

(With designation seal)

Office Seal.