

# 3-Day Short Course on Imaging for Biomedical Applications

(5–7 June, 2013)

## Fees

IEEE Student Member	RM 1,600
Full IEEE SPsoc Member\Student Non-Member	RM 1,800
Full IEEE Member	RM 1,900
Non-Member	RM 2,000

The fee is per person and includes lunch, refreshments and short course materials. A certificate of attendance will be given at the end of the course.

## Venue :

UTM Razak School of Engineering and Advance  
Technology, UTM International Campus  
Jalan Semarak  
54100 Kuala Lumpur  
Malaysia

## Organised by :



## COURSE OVERVIEW

The course will cover image processing techniques for various medical applications related to cancer research (detection and diagnosis of breast and lung cancer), dermatology (skin and pigmentation analysis) and ophthalmology (diabetic retinal image analysis).

The course will also include introduction to various medical image acquisition modalities, i.e. Multi spectral camera, X-ray, CT-Scan, Magnetic Resonance Imaging (MRI), 3D optical scanner, laser scanner and Fundus camera. Participants will get an opportunity to have hands-on experience on multispectral camera, 3D optical scanner, Laser scanner and Fundus camera.

## OBJECTIVES

- To introduce basic concepts of Digital Image Processing
- To familiarise with medical image acquisition modalities
- To explain and illustrate medical image analysis techniques

## TARGET AUDIENCE

Biomedical engineers and scientists, Researchers and Postgraduate Students, Medical doctors and Industry Researchers.

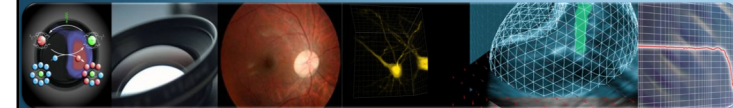


## 3-Day Short Course

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# Imaging for Biomedical Applications

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For the Further Details, please visit :

[http://www.utp.edu.my/CISIR/index.php?option=com\\_content&view=article&id=130&Itemid=107](http://www.utp.edu.my/CISIR/index.php?option=com_content&view=article&id=130&Itemid=107)

## For Any Further Information, Please contact

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or

Dr. Vijanth Sangayan Asirvadam (Associate Professor, UTP Malaysia)  
Secretary, IEEE SigProc Society, Malaysia

Email: [vijanth\\_sagayan@petronas.com.my](mailto:vijanth_sagayan@petronas.com.my)

# Programme Schedule

## Day 1: 5<sup>th</sup> June 2013

08:00	Registration & Opening Remarks
09:00	<b>Image Modalities:-</b> Multi spectral camera, X-ray, CT-Scan, Fundus camera
10:30	<b>Tea break</b>
11:00	<b>Image Modalities:-</b> 3D optical scanner, laser scanner
12:30	<b>Lunch Break</b>
14:00	<b>Image Modalities:-</b> Magnetic Resonance Imaging (MRI) Physics and Applications
15:00	<b>Image Processing:-</b> Image Enhancement and Image Segmentation
16:00	<b>Tea Break</b>
16:30	<b>Image Processing:-</b> Feature extraction and Classification

## Day 2: 6<sup>th</sup> June 2013

09:00	<b>Breast cancer detection:-</b> Segmentation: Histogram Equalization and Thresholding, Feature Extraction: multi-resolution analysis (curvelet, wavelet, wave-atom)
10:30	<b>Tea break:</b>
11:00	<b>Breast cancer detection:-</b> Classification: Support Vector Machine (SVM) and K-Means Clustering
12:30	<b>Lunch Break</b>
14:00	<b>Retinal image analysis:-</b> Enhancement: Retinex and Independent Component Analysis – RETINCA®, Segmentation: Region growing
15:30	<b>Tea Break</b>
16:00	<b>Retinal image analysis:-</b> Feature Extraction: Labeling, Euclidean distance, Morphology, Classification: Gaussian-Bayes theorem, Validation: V-fold Cross Validation

## Day 3: 7<sup>th</sup> June 2013

09:00	<b>Skin analysis (psoriasis, ulcer, pigmentation disorder):-</b> Feature Extraction (2D): CIE Lab colour space, ICA Classification (Psoriasis and Ulcer): K-Means Clustering
10:30	<b>Tea break:</b>
11:00	<b>Skin analysis (psoriasis, ulcer, pigmentation disorder):-</b> Feature Extraction (3D): Surface thickness, Surface roughness, Volume from 3D
12:30	<b>Lunch Break</b>
14:00	<b>Bio-optics (skin characterisation):-</b> Multispectral data, Modelling of light and skin interaction
15:30	<b>Tea Break</b>
16:00	<b>Certificate Presentation and Photo Session</b>

## SPEAKERS



### Professor Ir. Dr. Ahmad Fadzil Mohd Haniffa

Professor Fadzil is an expert in the area of image processing and computer vision. He received his PhD in Image Processing from University of Essex, UK in 1991. His research activities range from fundamental pattern recognition to developing signal and image processing solutions for vision and biomedical applications. He is currently heads the Centre for Intelligent Signal & Imaging Systems Research (a UTP COE) under the mission-oriented research in Biomedical Engineering at UTP. He is a Fellow of IEM, a Professional Engineer with BEM, a Senior Member of IEEE, and a Fellow of the Academy of Sciences, Malaysia. He is also a Non-Executive Director of ViTrox Corporation, a public-listed company that develops and manufactures automated vision inspection systems.



### Associate Professor Dr. Aamir Saeed Malik

He received his MSc and PhD from Gwangju Institute of Science & Technology, South Korea in 2000 and 2008 respectively. He is currently the Director of Mission Oriented Research Biomedical Technology at Universiti Teknologi Petronas. He is senior member of IEEE and member of Australian Pattern Recognition Society. He is involved in biomedical research since 1999 and has various publications in top-tier journals & conferences.



### Dr. Ibrahima Faye

He received his MSc and PhD in Mathematics from University Paul Sabatier of Toulouse in 1997 and 2001 respectively, and MS in Engineering of medical and biotechnological data from Ecole Centrale Paris in 2006. He is currently Senior Lecturer at Universiti Teknologi PETRONAS. His research interests include Engineering Mathematics, Signal and Image Processing, and Dynamical Systems.



### Dr. Nicolas Walter

He received his PhD degree in 2010 from Université de Bourgogne, France. Currently, he is Post-doctoral researcher at Universiti Teknologi PETRONAS, Malaysia. His research interests include computer graphics, multi-scale analysis, 3D reconstruction, multi-spectral analysis and classification.

## Participants Registration Form

PARTICIPANT INFORMATION			
Name			
Organization			
Position			
Full Address			
Phone Number			
Email Address			
SHORT COURSE INFORMATION (PLEASE PROVIDE THE DETAILS OF SHORT COURSE)			
Short Course Title			
Dates & Venue of Course			
Registration Fees Amount			
Registration As (Please tick (x) on appropriate)	<input type="checkbox"/> IEEE Student Member		Please provide the proof of membership or proof as student
	<input type="checkbox"/> Student Non-Member		
	<input type="checkbox"/> Full IEEE Member		
<input type="checkbox"/> Non-Member			
Mode of Payment (Please tick (x) on appropriate)	<input type="checkbox"/> Bankers Cheque		Please Attach the proof of payment
	<input type="checkbox"/> Demand Draft		
	<input type="checkbox"/> On-line Transaction to ITP Account*		
	<input type="checkbox"/> Case deposit to ITP bank account*		
Signature of the participant			



For On-line transaction and cash deposit to ITP account, please use the account information below

INSTITUTE OF TEKNOLOGY PETRONAS SDN BHD (352875-U):  
0809-0004124-054 (CIMB Bank Berhad, Batu Gajah)

Kindly fill the registration form and send a scan copy of filled form to one of the below e-mails:

[dileep.utp@gmail.com](mailto:dileep.utp@gmail.com) or [dileep.kumar@petronas.com.my](mailto:dileep.kumar@petronas.com.my)

**Note: - Registration should be completed 7 days before course commencement. First-come, first-served policy is implemented due to limited seats**

### For Any Further Information, Please contact

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H/P No.: 0195591650  
or  
Dr. Vijanth Sangayan Asirvadam (Associate Professor, UTP Malaysia)  
Secretary, IEEE SigProc Society, Malaysia  
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