

3 day workshop

Understanding Image Processing Techniques

Date: 27th, 28th, 29th October 2015.

Enquiries by email: M.Valdes-Hernan@ed.ac.uk

Duration: Three day workshop.

Audience: This course is intended for those who work in clinical and cognitive-related areas who do not have a background in computer sciences or image processing. Materials from the MSc Neuroimaging for Research correspondent to 20 credits will be available for participants from 2 weeks before the initial day of the course. They underpin the lectures and activities programmed during these 3 days.

The first day is dedicated to human imaging: brain and body. This will include format conversion, registration techniques, segmentation and other more complex processing (e.g. diffusion-weighted imaging, 3D modelling and time series).

The second day is dedicated to retinal and tissue imaging.

The third day is dedicated to pre-clinical imaging and general aspects as how to validate your image processing techniques.

Venue: Chancellor's Building, 49 Little France Crescent, EH16 4SB - MicroLab 2.

Payment will be made through the University's EPay system –

http://www.epay.ed.ac.uk/browse/extra_info.asp?compid=1&modid=2&deptid=75&catid=131&prodid=2020

The costs are :

£15 for eLearning materials

Delegates £50/day Students £30/day

Preliminary Outline of the course

Day one: Tuesday 27th of October 2015

9:00am - 9:15am	Presentations and Introduction
9:15am – 10:30am	Basics on MATLAB and image processing. Speaker: Dr. Maria C. Valdés Hernández
10:30am – 10:45am	Coffee and Tea break
10:45am – 11:30am	Pre-processing brain images. Pipelines in Linux and MATLAB. Speaker: Dr. Maria C. Valdés Hernández
11:30am - 12:30pm	Foetal and neonatal MRI processing. Speaker: Dr. Devasuda Anblagan
12:30m – 1:30pm	Lunch break
1:30pm – 2:30pm	Segmenting brain tissues in SPM Speaker: Dr. Cyril Pernet
2:30pm – 3:30pm	Automatic rating of disease markers Speaker: Dr. Victor Gonzalez-Castro
3:30pm – 3:45pm	Coffee and Tea break
3:45pm – 5:00pm	3D modelling of brain structures Speaker: Dr. Maria C. Valdés Hernández

Day two: Wednesday 28th October 2015

- 9:30am - 10:30am Introduction to retinal Image analysis
Speaker: Dr. Enrico Pellegrini
- 10:30am – 12:00pm Retinal image analysis for systemic and neurological biomarker discovery. Practical retinal analysis with VAMPIRE (Vasculature Assessment and Measurement Platform for Images of the Retina)
Speaker: Dr. Tom MacGillivray
- 12:00pm – 1:00pm Lunch break
- 1:00pm – 2:00pm Counting and segmenting cells, synapses and pathogens from microscope and fluorescent images
Speaker: Dr. Maria C. Valdés Hernández
- 2:00pm – 3:00pm Counting and classifying sperm samples
Speaker: Dr. Victor González-Castro
- 3:00pm – 3:15pm Coffee break
- 3:15pm – 4:45pm Classifying and characterising skin lesions
Speaker: Dr. Lucia Ballerini

Day three: Thursday 29th October 2015

- 9:30am – 10:00am Differences between human and pre-clinical MRI. General aspects of pre-clinical images
Speaker: Professor Ian Marshall
- 10:00am – 10:45am Cardiac imaging in mice
Speaker: Dr. Maurits Jansen
- 10:45am -11:00am Coffee break
- 11:00am – 11:30am Processing animal images with ImageJ
Speaker: Dr. Jessica Duncombe
- 11:30am – 12:00m Animal models of stroke
Speaker: MSc. Xenios Milidonis
- 12:00m – 1:00pm Lunch break
- 1:00pm – 2:00pm Texture analysis as a tool for identifying disease stages
Speakers: Dr. Víctor Gonzalez-Castro and Dr. Maria C. Valdés Hernández
- 2:00pm – 3:00pm Validation of image segmentation methods
Speaker: Dr. Maria C. Valdés Hernández
- 3:00pm – 3:15pm Coffee break
- 3:15pm – 4:15pm Target tracking for super-resolution microscopy
Speaker: Eng. Isabel Schlangen, Heriot-Watt University