

PAM3012

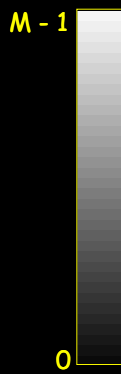
Colour and Co-registration

In this lecture

- ★ Colour Images
- ★ Image Co-registration
- ★ 3D Imaging

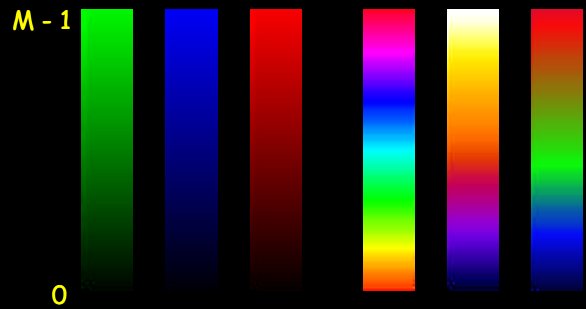
Look Up Tables

- Convert pixel intensity (a number) into a colour
- So far we have only considered shades of grey

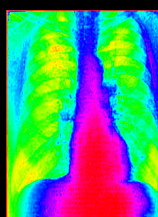
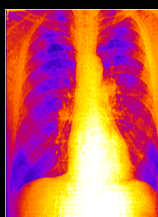
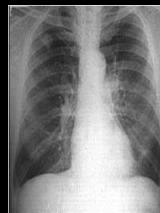


Colour LUTs

- LUTs are not restricted to greyscale



Colour LUTs



Colour Images

- RGB



Red

Green

Blue

Colour Images

- RGB



Red

Green

Blue



Co-registration

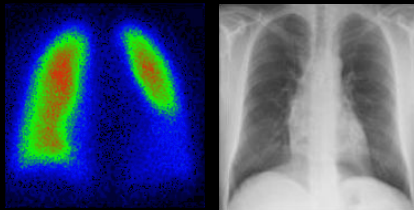
- Combining multiple complimentary modalities in a single image
- I.e. Combining Structural and Functional Imaging

Co-registration

- Functional versus anatomical imaging

Lung Scintigraphy

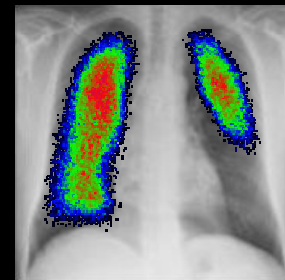
Lung Radiograph



Co-registration

- Functional versus anatomical imaging

Lung Scintigraphy/Radiograph

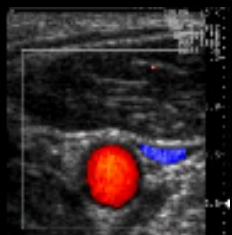


Co-registration

Doppler Ultrasound

Ultrasound

- Contrast: Structural
- Resolution: 100 μm



Doppler US

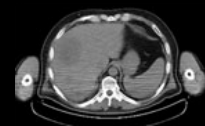
- Contrast: Blood Flow
- Resolution: 100 μm

Co-registration

PET CT

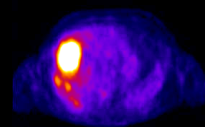
CT

- Contrast: Structural
- Resolution: High



PET

- Contrast: Functional
- Resolution: Low



Co-registration

PET CT

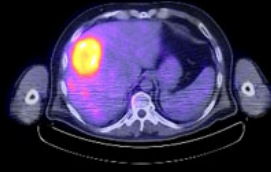
CT

- Contrast: Structural
- Resolution: High

PET

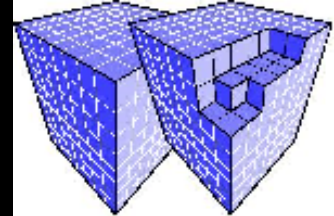
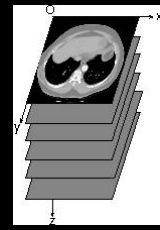
- Contrast: Functional
- Resolution: Low

PET-CT Fusion



3D Imaging

- Sectioning
- 2D: Pixels
- 3D: Voxels



3D Visualisation

CT



3D Visualisation



Summary

- ★ Colour Images
- ★ Image Co-registration
- ★ 3D Imaging