

Medical Imaging

Formats & Algorithms

Dicom

→ Digital imaging communication in medicine (an image standard)
Has header & data part. Header → Info about patient & scanner

Hounsfield Unit

A unit describe the attenuation of X-rays inside the human body.

$$HU = \frac{\mu_x - \mu_{H_2O}}{\mu_{H_2O}} \times 1000$$

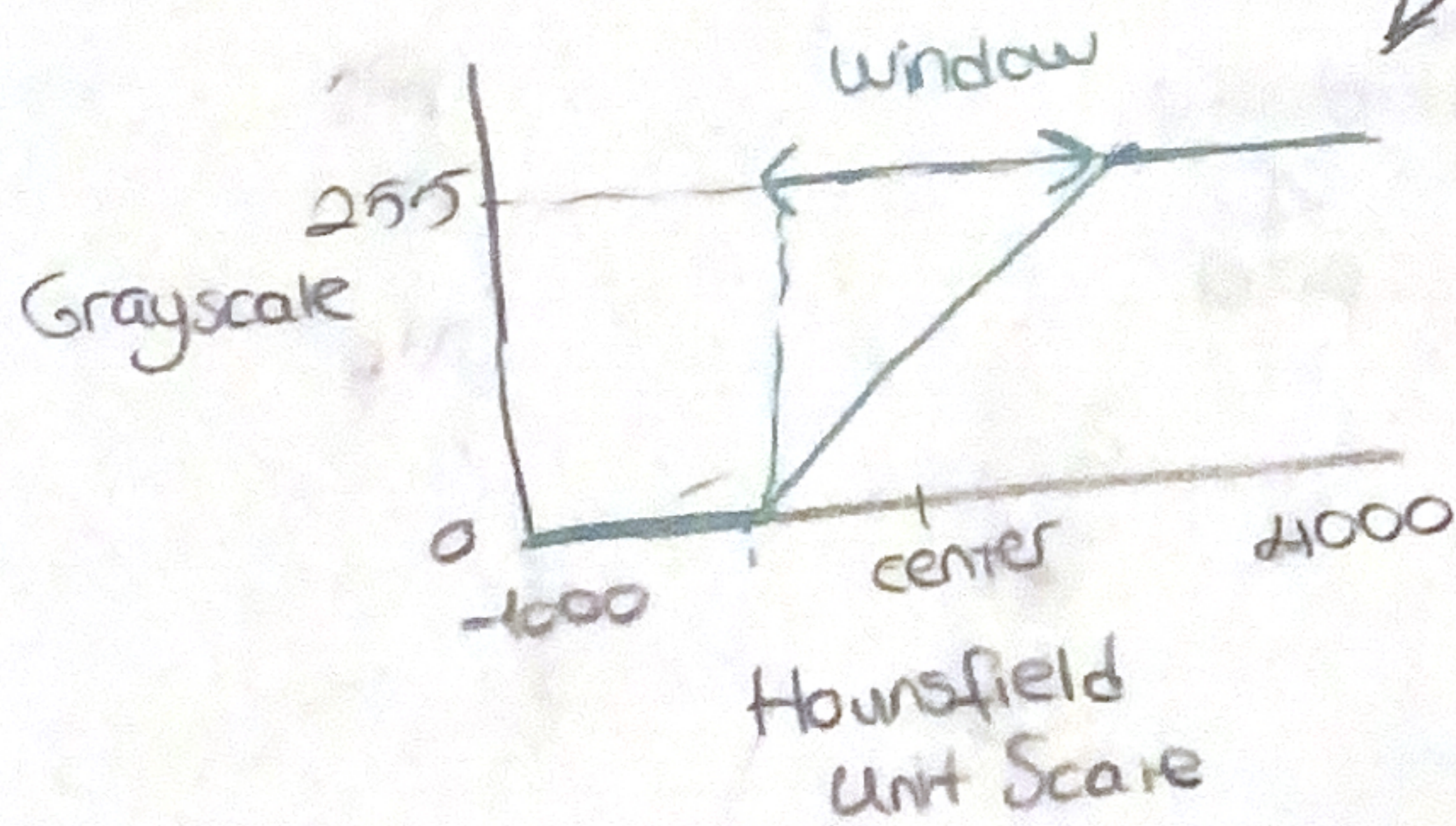
↙
attenuation coefficient
related to radiodensity
of material

↘ amount of transparency to the
passage of X-rays through
material.

$$HU_{H_2O} = 0 \quad \mu_{air} = 0 \rightarrow HU_{air} = -1000$$

HU is used in CT scanners.

In DICOM we store data in a range larger than 0-255 how we can display a wider range of values → Map for region we would like to display.



Volume Rendering

Technique for 3D visualization

3D viz is hard due to → unclear borders between organs
↘ unclear elements inside organs

Instead of trying to separate structure display all of them based on intensity values as 3D image