14/4/16

# RESCALING THE COLORMAP

Aim: Each colour change corresponds to the same amount of data.

FOR USE IN: Histograms, intensity plots etc where the counts are shewed to ~~high low~~ some particular values

BACKGROUND:

colormap: [1 2 3 ... 64] 64 colours (64×3 matrix)

We assume these colours are "evenly spaced".

data: [ ——————————→

↑ max values

Assume the data is 1d.

METHOD:

- Sort the data into ascending order
- Find the 62 quantiles so we will have 64 points
  $[\min, q_1, q_2, \ldots, q_{62}, \max]$
  to match up to colourmap values $[c_1 \ldots c_{64}]$
- Interpolate the existing colormap values so we can scale them. Use cubic piecewise interpolation.

PTO →

What we want ⇒ the correspondance

$\min(\text{data}) \sim c_1'$ ($c_i'$ is new colormap value)

$q_1 \sim c_2'$

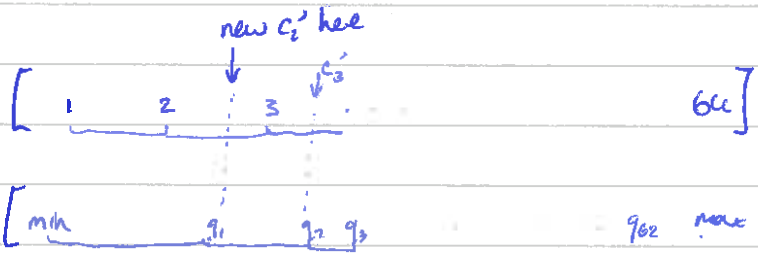
$q_2 \sim c_3'$

$\vdots$

$q_{62} \sim c_{63}'$

$\max \sim c_{64}'$

ie




new cmap ⇒ $[c_1' \quad c_2' \quad c_3' \quad \ldots$ ← so new colormap will be mirror-like same way that the data is skewed.

- find index corresponding to each quartile. $q_i$
- find out how much data this represents out of all the data, ie $\frac{\text{index}(q_i)}{\#\text{data points}}$
- scale this to [1:64] axis that our colours are defined and interpolated across
- find the value here on our interpolated axis - this ⇒ our new $c_{in}'$