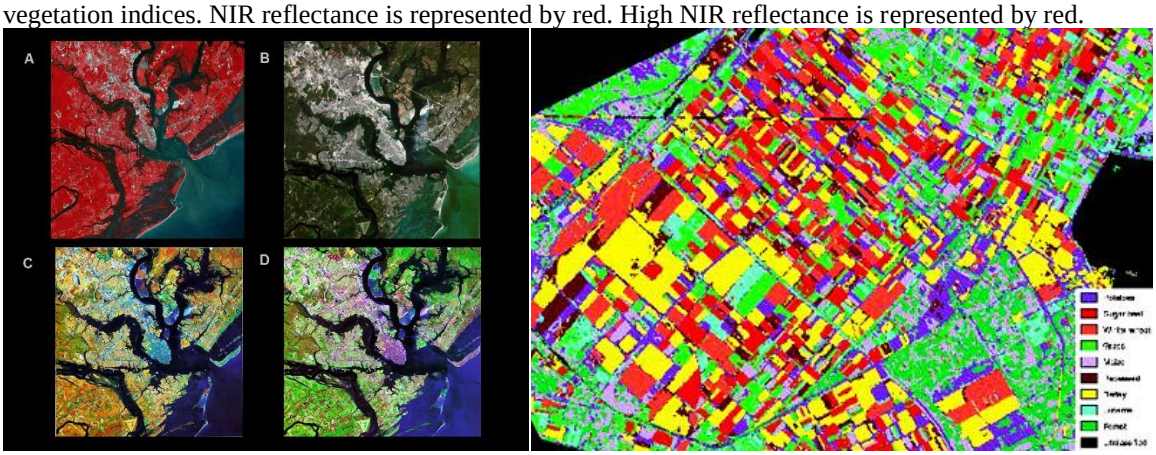
Multispectral Imagery

Refers to Multiple Bands (UV, R, G, B, NIR, MIR, thermal)

Landsat-7 ETM+ Bands (μm)			Landsat-8 OLI and *TIRS* Bands (μm)		
			30 m Coastal/Aerosol	0.435 - 0.451	Band 1
Band 1	30 m Blue	0.441 - 0.514	30 m Blue	0.452 - 0.512	Band 2
Band 2	30 m Green	0.519 - 0.601	30 m Green	0.533 - 0.590	Band 3
Band 3	30 m Red	0.631 - 0.692	30 m Red	0.636 - 0.673	Band 4
Band 4	30 m NIR	0.772 - 0.898	30 m NIR	0.851 - 0.879	Band 5
Band 5	30 m SWIR-1	1.547 - 1.749	30 m SWIR-1	1.566 - 1.651	Band 6
Band 6	60 m TIR	10.31 - 12.36	*100 m TIR-1*	*10.60 – 11.19*	Band 10
			100 m TIR-2	*11.50 – 12.51*	Band 11
Band 7	30 m SWIR-2	2.064 - 2.345	30 m SWIR-2	2.107 - 2.294	Band 7
Band 8	15 m Pan	0.515 - 0.896	15 m Pan	0.503 - 0.676	Band 8
			30 m Cirrus	1.363 - 1.384	Band 9

Multispectral bands are used to create false color composite images as can be seen in the image below. B is true color composite, meaning the RGB values are from the RGB reflectance. A uses the very common one to look at vegetation indices. NIR reflectance is represented by red. High NIR reflectance is represented by red.



Supervised Classification - You train the computer.

Create an average signature using training samples which are basically polygon samples of the raster imagery.For example if you want to classify land use: You would gather plenty of samples of Urban/Commercial land (that you know s being used for that purpose) and enter those into the supervised classifcation as one land class. Then you would repeat this for suburban, rural, agricultural, water, etc... All the land classes, and then run the classification. The most important part is that you trained the computer on how to classify, you "supervised" the classification.

The computer creates an average spectral signature for each land use class that you have created. Then when it runs the classification, each individual pixel is evaluated and grouped into a land class based on these average spectral signatures.

Unsupervised Classification

In unsupervised, the computer runs algorithms to group pixels into spectral clusters. The user decides how many different classes will be needed. Sometimes there will be several different land use classes in one cluster and further analysis and classification is needed.