Summary of Initial Papers

Alexander K. Kiar
Department of Physics & Astronomy
Western University
akiar@uwo.ca

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Abstract

Summary of questions and findings from the eight initial papers from May 27, 2016.

1 Eight-Dimensional Mid-Infrared/Optical Bayesian Quasar Selection

Explored multi-dimensional, multiwavelength selection of quasars from the IRAC and SDSS. Selection traditionally in two-colour space, used a combination of 8-D and 4-D techniques. Used Bayesian selection techniques and completness and contamination to evaluate selection.

1. Converted between Vega and AB photometry
2. IRAC channels: 3.6, 4.5, 5.8, 8.0
3. Made 8 unique colours with ugriz magnitudes
4. Used all SDSS filters and two short-wave IRAC bands
5. Bayesian selection section 3
6. Used mean colours to classify types of quasars. Can we use that in our classification?
7. Set colour limits to reduce error and removed faint and saturated objects. sec 3.1. Can we do the same?
8. Can we use completeness and contamination? Need a training set, could use a set of points from the data?

2 Towards auto classification of all WISE sources

Applied support vector machines with a training sample to spectroscopic dataset to auto classify objects.

1. used four infrared bands 3.4 - 23 um
2. used signal to noise 2 in shorter wavelengths and deteriorates in longer.
3. significant work on colour colour space for WISE survey
4. used magnitude, color, and differential aperture mag space
5. computed completeness and contamination for training set.

3 Meaning of WISE colours

Colour magnitude criteria to select AGB stars with dust shells and seperate into classes.

1. colour plots showing distribution of object types in survey
2. set magnitude limits to isolate certain objects. sec 2.
3. heat map distributions of colors
4. chose 12 colours, only 3 independent. Used the 3 to classify objects
5. use two-sided Kolmogorov Smirnov test to test distribution hypothesis. Sec 3.3.4
6. created model to predict object type based on colour

4 CLaSPS: new method for knowledge extraction

Using unspurvised clustering to identify correlations among astronomical obersvations.

1. use combination of features and labels. We have colour features for objects, could we use labels as well?
2. use a score and fraction of objects similar to our summary.
3. use Kmeans and vary number of clusters applied to data set