**Identifying Aircraft from above**

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We all know what an aircraft looks like, but does a computer? A seemingly simple task that can be carried out by individuals at age two, poses a complex problem to modern technology. Machine learning is a relatively new field with little research but already boasts claim to many applications such as driverless cars and face recognition systems. The development of object recognition is the center of many companies’ business models and objectives. To allow a computer to identify aircraft, existing images of ground and aircraft are pre-processed creating feature descriptors. Feature descriptors are numerical arrays of data that describe segments of an image. Machine learning models are then provided with these feature descriptors with labels to train the model. The model then forms an understanding of the training data and makes predictions on unseen, pre-processed images. The model returns a prediction and a set of associated probabilities.

The results obtained show an accuracy of 100% when identifying standalone aircraft

However, when searching for aircraft in larger images, accuracy drastically decreases to around 55%. Large image search takes a large image and looks within a search area for aircraft. The search area is then moved gradually by increments given by the user. Additionally, the user controls the size of the search area. After optimization, the system used to identify aircraft can be applied to other identification problems with possible military and commercial uses. The software can be given any set data meaning there’s no limit to what I can and can’t recognize.