

Snow Leopard Identification Using Digital Image Processing

Agnieszka Miguel

The purpose of this project is to develop digital image processing algorithms that would assist conservation biologists who study the location and behavior of snow leopards. Cameras placed by researchers in remote areas inhabited by snow leopards take photographs when a source of heat (i.e. snow leopard, fox, goat, or a large bird) passes in front of it. The researchers then spend many hours recognizing specific cats and their habitat. Because each snow leopard has a completely unique coat, snow leopards are identified based on the characteristics of their spot patterns such as their size, shape, orientation, and coloration. In this research, Dr. Miguel will use techniques from image processing, pattern recognition, and machine learning to aid researchers in their work with camera pictures. First, she will develop algorithms to sort the images obtained from one camera. Once the images are sorted, they will be analyzed by a program that searches for matches among the many different spot patterns. Close match between two images will indicate the same individual. The goal of the program will be to classify each image as representing a particular snow leopard.