

## **The Nature of Science**

Science throughout history has acted as both a tool for furthering human knowledge as well as a method of communicating across the world. As a result, science is an important part of any modern society. Even so, science is often portrayed as a scary thing that only people that went to school for ten years after high school can do. That is false. Although science can seem very intimidating, it has never been more accessible than it is now. To be clear, science can be challenging and frustrating, but it is made up for by being extremely rewarding both personally and for society. Science can be done by everyone.

In the age of easily accessible internet connections, science is becoming more and more accessible. A prime example of this is the increasing availability of citizen science. Citizen science is a collaboration between trained, high-level researchers and the general public, the citizen scientists. In many experiments, making classifications on data requires a large number of man-hours. In many cases, training anyone to classify the data is a straightforward process. Here, all data is seen by multiple rounds of trained citizen scientists to verify a classification. If something interesting is flagged in the data, it will be inspected by the primary researchers. This method is not only very efficient, but it is a great way for people interested in science to get involved.

One example of citizen science is Snapshot Serengeti, a comprehensive grid of motion-sensor cameras placed throughout Serengeti National Park in Tanzania. The pictures are aggregated in a database and then classified online by citizen scientists from all over the world. The classification process allows for tangible data to be collected: type and number of animals

pictured, what the animals are doing, and various data about the location of the camera. This is used for many different research projects. Some look to investigate specific pictures, while others aim to get an idea of statistical information about the interactions of certain species.

Over the course of a few weeks, I was involved with Snapshot Serengeti in my Environmental Biology class. The first few weeks were spent learning about the Serengeti and starting to use the Snapshot Serengeti classification software. Next, we designed an observational experiment with a large set of data coming from the Snapshot Serengeti project using a simple data visualization software JMP ('jump'). We found that spotted hyenas hunt more frequently when wildebeests are migrating. While it took some careful time and planning, it is quite amazing how much was able to be done for something that we learned in a hands-on technique in a few two hour lab classes. This goes to show how easy it is to get started by using citizen science. Coming from a background in physics, this was my first time doing something of this nature. I really appreciated how painless, informative, and enjoyable it was to explore my own research questions. This really confirmed for me that science does not have to have the high barrier for entry that it often seems to have.

Now the question is, where do we go from here? Hopefully, I have made it clear how easy it is to get involved in the scientific community. For those of you on board at this point, I have one thing that I recommend without hesitation: try science! It might surprise you how quickly you pick up a new skill, or learn about new things. An easy way to get started is browsing the web for experiments that involve citizen science to find something that interests you. The more you explore, the more you'll get the hang of finding things that you are passionate about and putting your skills to good use. The more people that are involved in the scientific method, the more our collective knowledge will expand and the better off we will be.