Abstract - Buchanan Summer 2016

Alec Buchanan

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# Showcasing MongoDB and Neo4j with ISS Experiment Information

Both MongoDB and Neo4j are NoSQL databases (Not Only SQL). MongoDB is a powerful document database, while Neo4j is a powerful graph database. Using these two technologies in unison, we are able to see relationships between data that we would have never seen before. Right now, the technology is not very well known and people do not understand what it is capable of. This is why David Meza and I have set out to look for ways to apply this new technology.

Because I am the only person working on this project, that means I am responsible for almost all aspects of the project. The first of my responsibilities is to setup the databases. This included a lot of configuring and problem solving. The next aspect I was responsible for was coming up with a graph model. The graph model is a representation of how the data in the database is organized. It also shows how the data in the database relates to other data nodes in the database. My next responsibility was to write a couple programs that would populate the databases. This included writing a scraper that would go to NASA’s website and pull data from the site. It also included writing a program that would do topic modeling on the information and create nodes appropriately.

This project is a perfect showcase of how powerful MongoDB and Neo4j can be when paired together. Neo4j can show relationships that are otherwise hard to detect, and MongoDB makes for a quick way to access a large set of data. This project can also serve as an interesting and interactive way for people to navigate the ISS experiments and results. As a result of this project, I have written plenty of documentation on how to setup MongoDB, Neo4j and my programs I made. I also have a list of problems and errors along with their solutions.

This internship has had a huge impact on my career and development. Coming into this position, I had no experience with NoSQL databases and have never heard of Neo4j or Linkurious. I was forced to learn quick and become a good problem solver. Within the first week I was already getting hands on experience with some of these systems. This internship has been amazing from an educational stand point; it has also been great from a business stand point. I have really learned the importance of networking and communicating. I have gone across the hall and have had some exciting conversations with the flight operations people. I have also gone and visited building 20 and talked to the other S&MA people. Overall, this has been the most interesting and rewarding internship I have ever had.