**Independent Study Proposal**

**Objective**

To gain experience and further understanding in the design and implementation of RESTful Web API’s with a focus on Hypermedia API’s implemented in a variety of languages and frameworks. Specifically following the principals laid out in the [Richardson Maturity Model](http://martinfowler.com/articles/richardsonMaturityModel.html) for implementing well designed RESTful Web Services.

**Richardson Maturity Model Principles in Summary**:

* Level 1 tackles the question of handling complexity by using divide and conquer, breaking a large service endpoint down into multiple resources.
* Level 2 introduces a standard set of verbs so that we handle similar situations in the same way, removing unnecessary variation.
* Level 3 introduces discoverability, providing a way of making a protocol more self-documenting.

**Required Reading Materials**

* [Building Hypermedia APIs with HTML5 and Node](http://shop.oreilly.com/product/0636920020530.do)
* Rest in Practice
* [RESTful Web APIs](http://shop.oreilly.com/product/0636920028468.do)
* [RESTful Web Services](http://shop.oreilly.com/product/9780596529260.do)
* [RESTful Web Services Cookbook](http://shop.oreilly.com/product/9780596801694.do)
* [Richardson Maturity Model](http://martinfowler.com/articles/richardsonMaturityModel.html)
* [Data on the Outside vs. Data on the Inside](http://msdn.microsoft.com/en-us/library/ms954587.aspx)

**Activities to Accomplish Objectives**

To accomplish the above laid out objectives, I will study the reading materials listed below, review the API’s of a number of well known Web Service providers, and design and implement a RESTful Web API of my own. The API will provide CRUD access to a simple sample movie database persisted in MongoDB serve the purpose of allowing me to gain experience utilizing the concepts and principles learned from my study. In conclusion I will produce a paper discussing my study, the design and implementation process followed for creating my API and how it my study enabled me to produce this API.

**Platforms, Languages and Frameworks Used**

The guiding factor for my choice of Platforms, Languages and Frameworks to use in building APIs is to use lightweight tools that allow direct access to the HTTP request and response messages and provide simple routing functionality.

- OS:

   -  Linux

- Languages & Frameworks

   - NodeJS

   - Python

- Tools & Platforms

  - Runscope for API testing

  - Github for hosting source code

  - Digital Ocean for hosting API’s

- Data Persistence

  - MongoDB

**Evaluation Process**

Evaluation of the Independent Study will depend on the completion of research including reading of reference material, meetings with advisor Dr. DiPierro, implementation of RESTful Web API as described above, as well as completion of final paper discussing my research into RESTful Web API design and my efforts implementing an API utilizing Hypermedia.