Mixed Order Hyper Networks Interface

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September 2016

Dissertation submitted in partial fulfilment for the degree of
Master of Science in Computing for Financial Markets

Computing Science and Mathematics
University of Stirling

Abstract

Mixed Order Hyper Networks tool overall goal, is to extract information from a data set and transform it into an understandable structure for further use. More specifically it concerns the extraction of patterns and knowledge from large amounts of data. However, the only implementation concerning Mixed Order Hyper Networks (MOHNs) so far is available only through a command line.

This project aimed to design and implement a Graphical User Interface for training Mixed Order Hyper Networks. Implementation of the software was initially delivered to me in a form of a .jar file, which by that time was accessible by a user, only through a Command Line Interface. The resulted GUI, would allow users to get a deeper understanding of what Mixed Order Hyper Networks are, train them with different data sources, implement their own function as a data source, define their structure by drawing it, search them in order to find inputs that maximise the output, save & load them respectively and finally even discover the structure of a trained MOHN.

The approach was to initially learn about Mixed Order Hyper Networks and the way they work. More specifically, their uniqueness towards other networks that are being used in data mining, in order to find out the components that should be emphasized in the application. Then, after having reached an outcome on what the interface would look like as a layout, each component's implementation has been done.

[23] The final implementation of the project involved building a Graphical User Interface in java programming language. More specifically JavaFX library has been used, since it tends to replace Swing as the standard GUI library for Java SE. Scene Builder software was used within the IDE in order to build the layout and except for the MOHN.jar file, Gson open source Java library has also been added to the projects' structure, to allow me serialize and deserialize Java objects to (and from) JSON.

A fully completed data mining tool was produced, which met the objectives of the project. Dynamical components such as designing selected structure and implementing a function as data source without having access to the source code, have also been achieved. The application resulted can easily be extended with more features without having to adjust the previous ones from the very start (from a layout perspective) through Scene Builder tool.