**Management of Objectives**

**Research Objectives vs. Technical Objectives**

A key area for you to be very comfortable with is the difference between two types of objectives which are relevant to your capstone. Your learning outcomes require you to identify a number of key research objectives in both your draft Research Proposal (in this module) and in your Capstone Project. The identification and implementation of Technical Objectives will play an important part in both this module and the Capstone Project. However, it is important to note that the identification of Technical Objectives only will not be sufficient for you to progress to the Capstone Project.

Understanding both types of Objectives are obviously key to your ability to undertake a project of this size to the depth that you are required to. The Research Objectives (ROs) need to align closely with your topic and are ultimately what you are assessed on.

There are 3 considerations we will be covering in relation to ROs:

1. **The relevance and alignment of your ROs to your topic and title.**
2. **The number of ROs you decide upon.**
3. **The nature of your ROs.**

I want to focus on point 3 above in a little more detail – It is important that you understand the differences here as if you rely solely on technical objectives, it is likely that you not address at least 4 of the learning outcomes required in this module. Note also that there may be technical related objectives within your Research Objectives; this is not unusual but ensure that the technical objectives are there to support your ROs.

The following are 2 sets of Objectives, one set are technical-based whilst the other are research based. Please take some time to look at and gauge the differences between the 2 sets:

**Examples of Technical based objectives:**

**Number One**

1. Collect accurate market data to train neural network models for better generalisation of an estimator.
2. Perform Neural Networks predictions on stock options and compare them with market prices.
3. Compare the prediction accuracy of Neural Networks to the Black Scholes model’s price estimates.
4. Collect trading data of real market trades in a simulated account based on the models’ predictions. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Number Two**

1. Train a DCNN from scratch on the available dataset.

2. Compare the performance of the trained model with various well-known DCNN architectures using transfer learning to improve generalizability.

3. Design Apache Spark deep learning framework for our proposed DCNN model with a view to minimizes the training time and speed up the model’s convergence.

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**Examples of Research based objectives:**

**Number One**

Through this analysis we want to examine:

1. Does enhanced cycling infrastructure encourage people to commute via cycling more?
2. Whether proximity to cycling infrastructure from origin encourages people to commute by cycling?

To enable this, this research will aim to discover several key questions:

* To what extent can the current assumptions of practitioners be supported by statistical analysis?
* How will the complexity of the production process be summarised in a model? Will using rules of thumb lead to inaccuracies?
* What relationship do certain variables that are currently not part of the financial forecast (number of steps in process, type of product etc.) have with cost? Can their impact be quantified?
* How can multiple variables and their weighted cost impact be incorporated into the financial forecast?
* Will including additional relevant variables enhance the forecasting process?

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**Number Two**

The hypothesis of this research is that the financial planning and analysis in a fabrication plant can be improved by utilising big data to identify cost drivers & understand their relationships with the consumption of commodities in the production process. (Assignment one)

The hypothesis of this research is that the financial planning and analysis in a fabrication plant can be improved by utilising big data to identify cost drivers & understand their relationships with the consumption of commodities in the production process. This enhanced comprehension of the cost impact of different variables will allow for more accurate financial projections by taking in the expected value of these contributing variables during a given period. (Assignment two)

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**Number Three**

The problems I will address in my Capstone project are the following:

1. Lapse Prevention (Customer Retention)
2. Customer Recommendations / Outcomes

## Lapse Prevention (Customer Retention)

A key objective of the project is to produce a set of trained models (most likely some form of neural networks and Random Forests) that are able to detect potential lapses by looking for signals in customer transaction data, overlaid with macroeconomic data. Also, a sentiment analysis model will be used to analyse customer interactions with the company to see how well-disposed they are towards the company. Using both types of model in a blended fashion, a schedule of potential lapses can be generated for the customer services teams to contact (note that the models will have no personal information) and engage with the customer.

A tangible outcome would be to see a reduction in lapses a life company suffers over a measurable time frame. A period of one year would be sufficient to determine if any actions implemented had a measurable effect on the lapse rate. An analysis by product type would be taken and lapse rates compared to previous years to see if an improvement has been observed.

## Customer Recommendations

This objective of this aspect of the project being met here is to produce a suite of software that can recommend suitable products (based on similar customer profiles) and investment strategies (based on the customer’s preferences in regards to risk).

In addition to a decrease in lapses from the first problem being addressed by the project, it would be possible to measure an improvement in take up in a similar time frame (the number of new policies sold and the average number / value (inflation-adjusted) of benefits will hopefully have improved with reference to previous time periods.

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**Number Four**

* Create a system to collect and consolidate Internet of Thing (IoT) data. The majority of studies on this topic rely solely on historical flight and meteorological data.
* Extract and collate data from the Internet of Things (IoT) relating to flights, weather and the quality of air. The IoT is comprised of a network of physical objects (“things”) that contain sensors and software that allow the exchange of data with other devices and systems over the internet.
* Identify features that have an effect on the delay of commercial flights by performing a correlation analysis on the extracted features from the IoT data.
* Use the list of significant features to develop a machine learning model, using the data mentioned above to accurately predict flight delays.
* Validate the results and accuracy of the model to determine overall effectiveness and potential for future use.

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And finally, please be careful not to take the following approach to your ROs:

1. Undertake a literature review to guide the scope and area of the analysis
2. Collect data to assess factors that affect………
3. Write an analysis piece based off the outcomes of the data
4. A case study of……..