**MSc. in Computing**

**Practicum Approval Form**

# Section 1: Student Details

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| Project Title: | Pig Price prediction in Europe |
| Student ID: | 17211401 |
| Student name: | Ankesh Kumar Mishra |
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| Chosen major: | MCM(Data Analytics) |
| Supervisor | Andrew McCarren |
| Date of Submission | 2nd Nov 2017 |

# Section 2: About your Practicum

Please answer all questions below. Please pay special attention to the word counts in all cases.

**What is the topic of your proposed practicum? (100 words)**

**Prediction of pig prices in Europe:** It will be a multi-step-ahead prediction in the Agri Dataset. The following models to be used will be implemented using Python:

1. ARIMA (Autoregressive integrated moving average modelling).
2. NN (Neural network)
3. RNN (Recurrent neural network)
4. Support vector regression.

**Please provide details of the papers you have read on this topic (details of 5 papers** expected).

1. Bahrpeyma F, Roantree M and MaCarren A. Multi-Resolution Forecast aggregation for Time series in Agri Datasets  
  
**How does your proposal relate to existing work on this topic described in these papers?** (200 words)

***What are the research questions that you will attempt to answer? (200 words)***

* Pig Price prediction in Europe using the machine learning models such as ARIMA, NN, RNN, Support vector regression.
* MSAP (Multi-step-ahead prediction) error elimination at each step using ROI (Resolution of impact).
* Which of the models amongst ARIMA, NN, RNN, Support vector regression is the most desirable for multi-step-ahead predictions of pig prices in in Europe.

***- What software and programming environment will you use?***

The programming language to be used in Python. Python is multi-purpose high level programming language, it supports high readability which is often helpful when writing lengthy complex programs. The object-oriented approach will be help reusability and referencing. Python also has most of the library functions required for the development of the proposed project.  
***- What coding/development will you do?***

***- What data will be used for your investigations?***

The data to be used for the investigation here is the weekly pig price in Europe. This dataset was mainly extracted from DATAS project. The available data ranges from 2007 running up to 2016.

***- Is this data currently available, it not, where will it come from?***

The data set is currently available. It has weekly pig prices in Europe for 10 years. So currently a total of five hundred twenty (520) line items are present.

***- What experiments do you expect to run?***

MRFA methodology will be incorporated using the ARIMA, NN, RNN, Support vector regression algorithms as MSAP tools. The experiments will include the following:

* The forecast models to be checked at each steps of multiple resolution.
* Determining weights: This determines the influence of each step output for the final determination of the result.
* Forecast Aggregation

***- What output do you expect to gather?***

* A comparative study of the different models (ARIMA, NN, RNN, Support vector regression).
* Predict the pig prices in Europe.
* Determine which methodology is the best for the MSAP of pig prices in Europe.

***-How will the results be evaluated?***

The results will be evaluated using the MSE (Mean squared error), since it is the most popular performance measuring parameter for a forecast model. In case( it is required to measure the algorithm models independent of the dataset then , NMSE (normalized mean squared error) will be used in the evaluation.