



29<sup>th</sup> June 2019

Dear [REDACTED]

Subject: Letter of Evaluation

This is with reference to the Global Academic Internship Programme (GAIP) conducted by Corporate Gurukul from 1<sup>st</sup> June 2019 to 29<sup>th</sup> June 2019 on 'Big Data Analytics using Artificial Neural Networks'. The course work for internship included the following:

Introduction to Data Analytics

- What is Data Analytics?
- Types of Data Analytics
- Data in Data Analytics
- Decision Models
- Data Mining Process
- Overview of Predictive Analytics

Exploratory Data Analysis

- Data Visualisation
- Data Querying
- Statistical Methods for Summarizing Data
- Exploring Data Using Pivot Tables

Descriptive Statistical Measures

- What is Descriptive Analytics?
- Populations and Samples
- Measures of Location
- Measures of Dispersion
- Measures of Shape
- Measures of Association

Introduction to Python Data Science Libraries

- Numpy
- Scipy
- Matplotlib
- Sci-kit Learn

Introduction to Regression Analysis

- Simple Linear Regression
- Multi Linear Regression
- Stepwise Regression
- Coding Scheme for Categorical Variables
- Problems with Linear Regression

Introduction to Classification

- Decision Trees
- Bayesian Classifier
- Logistic Regression
- Multinomial Logistic Regression



- Support Vector Machine
  - Separating Hyperplane
  - Maximal Margin Classifier
  - Support Vector Classifier

#### Introduction to Clustering

- Affinity Measures and Partition Methods
- K-means
- K-medoids
- Hierarchical Methods

#### Introduction to Text Mining

- Text Mining Terminologies
- Text Mining Concepts
- Text Mining Process
  - Creating the Corpus
  - Creating the Term-Document Matrix
- Extracting the Knowledge

#### Introduction to Association

- Structure and Representation of Association Rules
- Strong Association Rules and the Concept of Frequent Itemsets
- Apriori Algorithm
- FP Growth
- Time Series Analysis

#### Introduction to Text Mining

- Text Mining Terminologies
- Text Mining Concepts
- Text Mining Process
  - Creating the Corpus
  - Creating the Term-Document Matrix
- Extracting the Knowledge
- Knowledge Extraction Methods for Text Mining
  - Classification
  - Clustering
  - Association

#### Overview of ANN

- Break-through Applications with ANN
- Why ANN?
  - Problems of Logistic Regression
- Back-propagation
- Gradient Descent Algorithm (GD)

#### Difficulties of training ANN

- Poor Gradient
- Overfitting and Underfitting



Advanced GD algorithm

- Stochastic GD (SGD)
- Mini-batch SGD
- Momentum SGD
- RMSprop and Adam

Other Training Techniques of ANN

- Random Initialization
- ReLU
- Dropout
- Data Augmentation

Convolutional Neural Networks (CNN)

- Convolution, Pooling Operations
- Popular CNN Architectures
- Applications of CNN in Python

Recurrent Neural Networks (RNN)

- Vanilla RNN
- LSTM and GRU
- Applications of RNN in Python

Your performance in GAIP was evaluated based on theoretical understanding and application of concepts in practical data analysis with **GRADE B+**.

We encourage you to further your knowledge, skills and research in the above areas and wish you the very best for a career ahead!

Sincerely,

Senior Lecturer  
Strategic Technology Management  
Institute  
National University of Singapore

Lecturer  
Strategic Technology Management  
Institute  
National University of Singapore

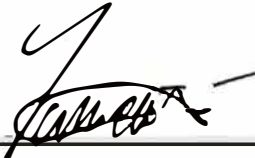


Assistant Professor  
Strategic Technology Management  
Institute  
National University of Singapore



## TRANSCRIPT

GLOBAL ACADEMIC INTERNSHIP PROGRAMME JUNE 2019 BIG DATA ANALYTICS USING ARTIFICIAL NEURAL NETWORKS	
Name: <span style="background-color: black; color: black;">[REDACTED]</span>	Date: 29 <sup>th</sup> June 2019

Assessment Component	Score	Topic/Parameter
In-Class Assessment	20/40	Introduction to Data Analytics and Descriptive Statistical Measures
	16/40	Introduction to Python Data Science Libraries & Regression Analysis
	12/40	Classification
	12/40	Association and Text Mining
	20/40	Artificial Neural Networks, Convolutional Neural Networks and Recurrent Neural Networks
Final Comprehensive Assessment	24/80	Comprehensive Assessment for the Course
Project Assessment	37/50	Final Project Work

	Assessment			Overall Percentage (Out of 100%)
	In-Class Assessment	Final Comprehensive Assessment	Project Assessment	55
	30% weightage	20% weightage	50% weightage	Grade
Percentage	12/30	6/20	37/50	B+
Faculty Assessor Signature				
Faculty Assessor Name	<span style="background-color: black; color: black;">[REDACTED]</span>	<span style="background-color: black; color: black;">[REDACTED]</span>	<span style="background-color: black; color: black;">[REDACTED]</span>	

Grading Guideline:

O	100 - 90	B	54.9 - 50
A+	89.9 - 80	B-	49.9 - 45
A	79.9 - 70	C	44.9 - 40
A-	69.9 - 60	F	<40
B+	59.9 - 55		