

BACKGROUND

Sector	Infocomm Technology (ICT)
Industry Overview <i>(Brief description of the sector)</i>	<p>The Infocomm Technology (ICT) sector continues to play a key role in Singapore's economic development. According to the IMDA's Annual Survey on Infocomm Media Manpower for 2019, the number of ICT professionals employed grew by 8,100 (4.3%) from 2017 to reach 197,500 in 2018. Together with 18,700 Infocomm job vacancies, total demand of Infocomm professionals increased by 6.7% from 2017 to reach 216,200 in 2018. Demand for Infocomm professionals is projected to grow by another 61,600 in the next 3 years (2019 – 2021).</p> <p>Singapore is poised to become the world's first Smart Nation which aims to develop Singapore's capabilities in pervasive connectivity, and build new infrastructure and common technical architecture to enable citizens, businesses and government agencies to leverage technology to make lives better. This initiative would increase the demand for ICT professionals in the areas of Software and Applications, Network and Infrastructure and Critical Emerging Technology (such as Business Analytics and Cyber Security).</p>

JOB DETAILS

Job Title <i>(Upon Completion Of Programme)</i>	Data Analyst
Nature Of Job	<ul style="list-style-type: none">• Identify the factors influencing the Data Visualisation• Identify suitable data structures based on business needs to ensure availability and accessibility of data Support the translation of business needs into analytics and reporting requirements• Design Data Visualisations and reports using Power BI• Develop code for data cleaning and transformation.• Perform initial visualisation of the data using R or Python• Develop AML modules• Split the time series data using R or Python• Training, Scoring and evaluate data• Plotting predictions using Power BI• Gather Data from internal systems and external sources using joining and Perform Cleansing Activities in removing duplicates and replace missing data

	<ul style="list-style-type: none"> • Conduct extraction and integration of data including features from different data sources • Develop multiple models and algorithms suitable for the use case • Develop regression • Models, including linear, multiple and logistic regression models • Data Exploration Activities using Histogram and scatter plots • Perform Machine Learning Activities and Propose solutions and recommendations • Develop mathematical models to isolate trends • Analyse data using IRAC method identify trends, patterns and correlations to support decision-making in predictive maintenance project • Perform analysis on the data to prove/disprove the hypothesis and obtain business insights using the relevant programming language/tools for big data analytics tools • Develop a report of the business insights for a Feature data engineering, Text pre-processing • Implement a predictive solution using Spark
Monthly Gross Salary	<p>\$4,000*</p> <p><i>*Starting salary will differ with skills, experience and qualifications.</i></p>
Job Requirements	NA

COURSE DETAILS

Programme Name	PCP for Data Analyst
Programme Overview	<p>Lithan's NICF-Diploma in Infocomm Technology (Data) course aims at providing career centric qualifications to IT professionals who would like to embark on Data Analysis</p> <p>Learners will be able to gain fundamental knowledge and skills required to R programming, Statistical modelling and Azure Machine learning to Clean, Analyse, Visualise and Predict both structured and unstructured data using machine learning models in R studio, Azure Machine Learning studio, Spark HDInsights.</p> <p><u>Module 1: Data Queries and Visualisation Basics</u></p> <p>By the end of this module, the learner should be able to gain the following knowledge:</p> <ul style="list-style-type: none"> ▪ Understand different types of data visualisation techniques using Power BI ▪ Learn how to perform visual analysis to gather insights ▪ Understand Data visualisation tools like Power BI

- Understand the anatomy of a data visualisation
- Understand Visualisation design methodology and process with Power BI
- Foundational statistics that can be used to analyse data
- Syntax of Transact-SQL, working with data types, tables and manipulating data using T-SQL
- How to programme using Transact-SQL
- Learn how to perform visual analysis to gather insights

By the end of this module, the learner should be able to apply the following skills:

- Identify key factors that may affect the success of data visualisation
- Assess the data to be visualised based on the volume, velocity and variety
- Gather insights/stories using the relevant Power BI visualisation techniques
- Develop a data visualisation model that conveys the insights to the audience
- Write programs using T-SQL
- Implement error handling and transactions using T-SQL
- Identify key factors that may affect the success of data visualisation
- Assess the data to be visualised based on the volume, velocity and variety

Module 2: Basic R Programming

By the end of this module, the learner should be able to gain the following knowledge:

- Introductory R language fundamentals and basic syntax
- Basics of R and how it's used to perform data analysis
- Creating Matrices and Data frames
- Work with data in R
- Introduction to Azure Machine Learning
- Introduction to Forecasting and Time Series

By the end of this module, the Learner should be able to apply the following skills:

- Define analytics architecture requirements to deploy the predictive model
- Design and develop predictions in Azure Machine Learning (AML) studio
- Create R scripts and integrate in AML
- Create Time series forecasting model
- Monitor and tune the deployed model to ensure that it delivers the expected outcome and minimize the error predictions

Module 3: Data Science Essentials

By the end of this module, the Learner should be able to gain the following knowledge:

- Understand the research process and practices of Data Exploration and Visualisation
- Probability and statistics in Data Science
- Simulation and hypothesis testing using R
- Data Ingestion, cleansing and transformation processes
- Various research claims
- Survey design and measurement, Reliability and Validity
- Correlation and Experimental design

By the end of this module, the Learner should be able to apply the following skills:

- Working with probability and statistics; Simulation and hypothesis testing
- Create and customise visualisations using ggplot2
- Design the process of predictive analysis to transform extracted dataset into models using R
- Consolidating data from multiple datasets and Visualisation with Azure Machine Learning and R on Azure stack
- K-means clustering with Azure Machine Learning
- Design Correlation and Regression Experiments
- Develop data integration procedures using Webservice modelling from Azure Machine Learning

Module 4: Statistical Thinking for Data Science and Analytics

By the end of this module, the Learner should be able to gain the following knowledge:

- Legal and ethical foundations in Data practice
- Bias in Data processing and Data privacy
- Business and Ethical Data usage
- Range of statistical and advanced computational modelling techniques
- Advanced mathematical models and theories
- Elements of various Statistics and probability
- Features, pros and cons of various statistical approaches, algorithms and storytelling

By the end of this module, the Learner should be able to apply the following skills:

- Sampling analysis using Azure notebooks
- Analyse Frequency and Association
- Apply the IRAC framework to real-world cases
- Analyse Recidivism data set and context.
- Craft analytics story
- Conduct probability analysis
- Differentiation and derivatives

Module 5: Principles for Machine Learning

By the end of this module, the learner should be able to apply the following skills:

- Identify text analytics solution and platform requirements

- Define the metadata and corpus for the data to be imported into the text analytics repository
- Develop a standardised set of text analytics artifacts with the relevant stakeholders
- Develop term-document frequency matrix to enable lookup of text and documents within the corpus
- Modify the text analytics solution to ensure that it produces the expected results
- Define the process to perform text analytics based on the business requirements and text analytics artifacts
- Use regularisation on over-parameterised models
- Apply cross validation to estimating model performance
- Apply and evaluate k-means and hierarchical clustering models
- Apply Machine Learning models to real-life situations

Module 6: Spark on Azure HDInsight

By the end of this module, the learner should be able to gain the following knowledge:

- Programming language and tools for big data analytics and how they integrate with big data technologies
- Emerging trends in the business domain
- Concepts of computing used in big data analytics
- Machine Learning Support in Spark Clusters
- Implement a predictive solution using Spark
- Build real-time machine learning solutions with Spark.
- Use R to work with data and build models by leveraging Hadoop in HDInsight.
- Software development methodologies, with emphasis on requirement gathering for data science projects
- Role of stakeholders and their level of involvement in data science projects
- Information gathering methods for data science projects
- Functional and non-functional requirements of Data Science projects and document them
- Principles of reactive and proactive problem management
- Documentation requirements and protocols in problem management
- Usage of documentation tools, systems and records to log relevant information throughout the problem's lifecycle

By the end of this module, the learner should be able to apply the following skills:

- Review the hypothesis to address problem statement for the analytics project
- Explore the data in the analytics platform/organisation to familiarise with the data available for analysis
- Perform analysis on the data to prove/disprove the hypothesis and obtain business insights using the relevant programming language/tools for big data analytics tools
- Develop a report of the business insights for a case study
- Implement a predictive solution using Spark

	<ul style="list-style-type: none"> ▪ Identify and review key information sources related to the business problem / needs ▪ Elicit information from key stakeholders using appropriate information gathering methods ▪ Analyse and prioritise the business requirements to be aligned to the organisation's directions ▪ Identify dependencies for the identified business requirements ▪ Implement solutions to address the problem through appropriate control procedures ▪ Propose solutions to prevent future occurrences of similar problems ▪ Document information about problems and the appropriate workarounds and resolutions
Qualification / Certificate Name	NICF-Diploma in Infocomm Technology (Data)
Course Pre-Requisites <i>(e.g.: Academic qualifications, prior experience, etc.)</i>	<p>Interested individuals and employers need to meet the following criteria:</p> <p><u>Individuals</u></p> <p>The Programme is open to all company-sponsored applicants who meet the following General Eligibility Criteria:</p> <ul style="list-style-type: none"> • Singapore Citizen (SC) or Permanent Resident (PR); • Minimum 21 years old; • Graduated or completed National Service, whichever is later, at least two years prior at the point of application • Not in a same job role prior to joining the PCP; • New hires should be hired for not more than three months; • New hires must not be in the same job role prior to joining the PCP; • New hires must not be a shareholder of the PCP company, or its related companies; • New hires must not be related to the owner(s) of the PCP company; and • New hires must not be immediate ex-staff of PCP company or its related companies. <p>Course-Specific Entry Criteria:</p> <ul style="list-style-type: none"> • Enrolment for the PCP is subject to employer's selection based on job requirements, and hiring process that may include screening tests and interviews. • Enrolment for the PCP is subject to course pre-requisites. <p><u>Employers</u></p> <ul style="list-style-type: none"> • Be registered or incorporated in Singapore; • Ensure that new hires cannot be: <ul style="list-style-type: none"> ○ A shareholder of the PCP company, or its related companies;

	<ul style="list-style-type: none"> ○ Related to the owner(s) of the PCP company; and ○ Immediate ex-staff of PCP company or its related companies; • Offer a full-time PMET position employment contract on permanent terms or on contract terms that are no less than one (1) year; • Be committed to work with WSG and its appointed Programme Manager on the necessary administrative matters related to the PCP; • Offer employment directly related to the job which the PCP is for, with remuneration that is aligned with the market rate; and • Commit to the PCP training arrangements for the trainees.
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APPLICATION DETAILS

<p>How To Apply For The Programme</p>	<p><u>Applicants</u></p> <p>Interested applicants can visit www.wsg.gov.sg/pcp to apply. Suitable applicants will be shortlisted by participating employers for interview before embarking on the programme.</p> <p><u>Employers</u></p> <p>Interested employers can contact Lithan Academy (Programme Manager) to register as participating companies.</p> <p>Email: info@lithan.com</p>
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