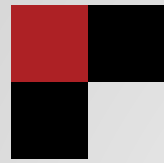**algoritma**

learn data science by building
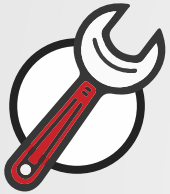
20

WORKSHOPS

620

PARTICIPANTS

20+

CORPORATE CLIENTS

WHY US?

Curriculum tailored to the needs of industries

Small cohort sizes allow more personal interaction with teaching assistants

Final projects are directly applicable to the industry

algoritma
learn data science by building

DATA VISUALIZATION SPECIALIZATION

A fun, hands-on, and project-based specialization that helps student gain full proficiency in data visualization systems and tools. Create compelling narratives by combining charting elements with custom aesthetics under the guidance of our instructors.

The learn-by-building module in all the workshops follows our project-based learning philosophy to this specialization. The course capstone requires that the student build a real-world application under stringent criteria modeled after real business scenarios.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

DATA VISUALIZATION IN R

INTERACTIVE PLOTTING & WEB DASHBOARD

Programming for Data Science

is a course that cover the important programming paradigms and tools used by data analysts and data scientists today. You will be guided through a series of coding exercises designed to maximize your familiarity with data science programming in RStudio, an integrated development environment for the statistical computing language R.

Upon completion of this workshop, you will be familiar with the programming language, popular tools, libraries (data science packages) and tool kits required to excel in your data analysis and statistical computing projects.

PROGRAMMING FOR DATA SCIENCE

3-Day Workshop Modules

Workshop Module 1: Data Science Toolkit

Data Science in R
- R Programming Basics
- Data Structures in R
- R Studio Interface

Data Science in Python
- Introduction to Python
- Jupyter Notebook Interface
- Data Science Toolkit

Working with Data
- Understanding Statistics
- Reading & Extracting Data
- Exploratory Data Analysis

Workshop Module 2: Data Manipulation

Data Manipulation
- Getting Familiar with your Workspace
- R Scripts and Markdown
- Continuous and Categorical Variables

Data Manipulation II
- Vector Types
- List and Objects
- Matrix and Dataframes

Practical Data Cleansing
- The Data Transformation Process
- Reproducible Data Science Projects
- Reading and Writing from your IDE

Learn-by-Building Modules

Module 1: Retail Sales Pre-Diagnostic Cleanup
A programming script that reads data into our workspace, perform various data cleansing tasks, and save the appropriate formats for data science work.

Module 2: Reproducible Data Science
Create an R Markdown file that combines data transformation code with explanatory text. Add formatting styles and hierarchical structure using Markdown.

Practical Statistics

Pave the statistical foundation for more advanced machine learning theories later on in the specialization by picking up the key ideas in statistical thinking. Learn to interpret correlations, construct confidence intervals and other statistical principles that are the basis for regression analysis.

The 2-day course is optional for participations of the Data Science and Machine Learning Specialization and intended for learners without prior experience in statistics.

2-Day Workshop Modules

Workshop Module 1: Descriptive Statistics

5-Number Summary
- Mean, Median, Mode
- Understanding Quantiles
- Quantiles in R
- 5-Number Summary in R

Central Tendency & Variability
- Probability Distribution Function
- Visualizing Central Tendency
- Understanding Variation
- Covariance and Variance

Standard Score & z-score
- Standard Normal Curve
- Central Limit Theorem
- z-score Calculation in R
- z-score and Student's t-test

Workshop Module 2: Inferential Statistics

Probabilities
- Probability Mass Function
- Probability Density Function
- Expected Values

Intervals
- Confidence Intervals
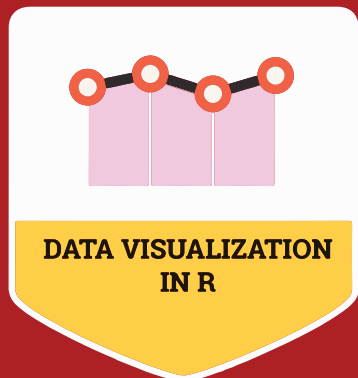- Prediction Intervals
- Hypothesis Testing
- p-values

Inferential Statistics in Practice
- Deriving Scientific Truths from Data
- Making Informed Decisions
- Case Studies

Learn-by-Building Modules

Module 1: Exploratory Data Analysis
Write a reproducible data analysis applying what you've learned in the workshop. The analysis should contain at least 3 statistical plots, and a summary paragraph that contains your early findings / points of interest from the given dataset.

Data Visualization in R

A fun, hands-on, and project-based workshop that helps student gain full proficiency in data visualization systems and tools. Create compelling narratives by combining charting elements with custom aesthetics under the guidance of our instructors.

Students are tasked to reproduce a series of plots applying what they've learned. While it covers the three main plotting systems in R, its particular focus is on ggPlot2 and the additional libraries centered around it that bring interactivity and enhanced aesthetic options to the art of creating rich, powerful visualizations.

3-Day Workshop Modules

Workshop Module 1: Plotting Essentials

Built-in Plotting Functionalities
- Plots and Lines
- Built-in Plot Types
- Histograms and Curves
- Axis, Title, and Panel Styles

ggPlot Plotting System
- Grammar of Graphics System
- Mapping Aesthetics
- Understanding Geometries
- Axis, Title, and Scales

Enhancing ggPlot
- Adding Themes to ggPlot
- Custom Aesthetics and Styles
- Multi-dimensional Faceting
- Text Layers and Custom Text

Workshop Module 2: Richer Visualization Techniques

Simple Interactivity
- Using Manipulate
- ggiraph
- HTML5 Widgets

Visualizing Geo-Spatial Data
- Dealing with Spatial Dataframes
- Using Leaflet
- Using tmap

Visualization Toolset
- Lattice Plotting System
- Using Plotly
- Prettier Pairs Matrix
- Prettier Heatmap

Learn-by-Building Modules

Module 1: Creating a Publication-Grade Plot
Applying what you've learned, create an economics- or social-related plot that is polished with the appropriate annotations, aesthetics and some simple commentary.

Module 2: Creating an Interactive Map
Applying what you've learned, create a web page with an interactive map embedded on it. Use a custom icon for the map markers to represent business locations, and show details about each location pin ("markers") upon user's interaction with it.

Interactive Plotting & Web Dashboard

Building on the foundation from previous classes, we will create a series of interactive plots and gadgets that renders multiple visualization elements based on user's input. This is the final workshop leading up to the data visualization capstone project.

The 3-day course follows our learn-by-building approach, in that students are tasked to reproduce a series of plots applying what they've learned. It covers an exhaustive list of techniques that add interactivity to an R document and set the stage for the data science capstone project.

3-Day Workshop Modules

Workshop Module 1: Deep Dive Shiny

Shiny Essentials
- Interactive Documents
- Working with Gadgets
- Working with miniUI
- Interactive Documents in Action

Standalone App
- Shiny App Formats
- UI Components
- Server Components
- App Deployment Solutions

Server Logic
- Data Binding
- Reactivity
- Performance Consideration
- Deployment

Workshop Module 2: Building Dynamic Dashboards

Flexdashboard
- Layouts and Templates
- Storyboard
- Adding Custom Styles

Shiny Dashboard
- Dashboard Structure
- Adding Custom Styles
- Working with Twitter Bootstrap

Building a Dynamic Dashboard
- Working with Live Data
- App Deployment Solutions
- d3, Leaflet, and Google Visualization

Learn-by-Building Modules

Module 1: Building an Interactive Dashboard
Applying what you've learned, create a paginated web dashboard with a rich set of UI elements coupled with the appropriate server logic. The web dashboard can be of any tgeme, using any dataset, but must feature an input panel that accepts end user inputs and render the output accordingly.

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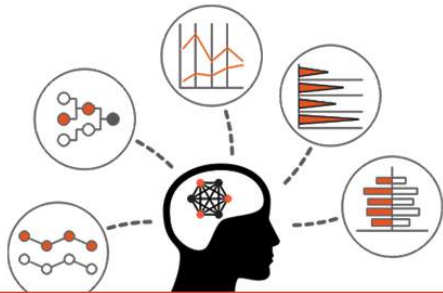
MACHINE LEARNING SPECIALIZATION

SPECIALIZATION DETAILS :

An intensive specialization that strives for a fine balance between practical applications and mathematical rigor in teaching essential machine learning concepts. By taking a learn-by-building approach, you will learn to develop regression and classification algorithms and incorporate them into real-life solutions or data products / business applications.

The modules in all the workshops follow our project-based learning philosophy to this specialization. The course capstone requires that the student build a real-world application under stringent criteria modeled after real business scenarios.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

REGRESSION MODELS

CLASSIFICATION IN MACHINE LEARNING I

CLASSIFICATION IN MACHINE LEARNING II

UNSUPERVISED MACHINE LEARNING

TIME SERIES AND FORECASTING

NEURAL NETWORK & DEEP LEARNING

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

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PROGRAMMING FOR DATA SCIENCE

Programming for Data Science

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Practical Statistics

PRACTICAL STATISTICS

Pave the statistical foundation for more advanced machine learning theories later on in the specialization by picking up the key ideas in statistical thinking. Learn to interpret correlations, construct confidence intervals and other statistical principles that are the basis for regression analysis.

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2-Day Workshop Modules

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Probabilities
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- Probability Density Function
- Expected Values

Intervals
- Confidence Intervals
- Prediction Intervals
- Hypothesis Testing
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- Case Studies

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Module 1: Exploratory Data Analysis
Write a reproducible data analysis applying what you've learned in the workshop. The analysis should contain at least 3 statistical plots, and a summary paragraph that contains your early findings / points of interest from the given dataset.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

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NEURAL NETWORK & DEEP LEARNING

Regression Models

REGRESSION MODELS

This course strives for a fine balance between business applications and mathematical rigor in its treatment to regression models, one of the most essential statistical techniques in the field of machine learning. Its aim is to equip you with the knowledge to investigate relationships between variables of a data effectively and rigorously.

We strongly recommend that you complete practical statistics prior to taking this course. Upon completion of this workshop, you will acquire a rigorous statistical understanding of machine learning models, allowing you to extrapolate the same ideas into other, more advanced machine learning models.

3-Day Workshop Modules

Workshop Module 1: Linear Models

Simple Linear Regression
- Intercept and Slope
- Understanding Coefficients
- Estimating Coefficients

Assumptions of Linear Models
- Linearity Assumption
- Relations to Correlation
- Normality Assumption
- z-Score

Interpretation
- Interpreting models in R
- Business Application I
- Business Application II

Workshop Module 2: In-Depth Regression Models

Non-linear Regression Models
- Polynomial Terms
- Adding Interaction Terms
- Model Interpretation

Model Diagnostics
- Ordinary Least Squares
- Plotting Residuals
- Residuals Calculation (manual)

Model Diagnostics II
- R-Squared
- Heteroskedasticity
- Box-Cox Transformation

Learn-by-Building Modules

Module 1: Lowering Crime Rates
Write a regression analysis report applying what you've learned in the workshop. Using the dataset provided by you, write your findings on the different socioeconomic variable most highly correlated to crime rates, and quantify the relations between education level and violent crimes level in a city. Explain your recommendations where appropriate.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

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NEURAL NETWORK & DEEP LEARNING

Classification in Machine Learning 1

CLASSIFICATION IN MACHINE LEARNING I

Learn to solve binary and multi-class classification models using machine learning algorithms that is easily understood and readily interpretable. You will learn to write a classification algorithm from scratch, and appreciate the mathematical foundations underpinning logistic regressions and nearest neighbors algorithms.

We strongly recommend that you complete the regression models workshop prior to taking this course. Upon completion of this workshop, you will acquire the depth to develop, apply, and evaluate two highly versatile algorithms widely used today.

3-Day Workshop Modules

Workshop Module 1: Logistic Regression

Relating Probabilities to Odds
- Understanding Odds
- Log of Odds
- Sigmoid Curve

Logistic Regression from Scratch
- Prior Probabilities
- Exponents and Logarithms
- Interpreting Logistic Regression

Practical Application
- Using Logistic Regression: Finance
- Using Logistic Regression: General Business
- Hauck-Donner Effect

Workshop Module 2: Nearest Neighbours Prediction

k-NN as a Classifier
- Distance Function
- k-NN Intuition
- Choosing k

Model Improvement
- Bias-Variance Tradeoff
- Normalization and Scaling
- Cross Validation

Model Evaluation
- Area Under Curve
- Precision-Recall Tradeoff
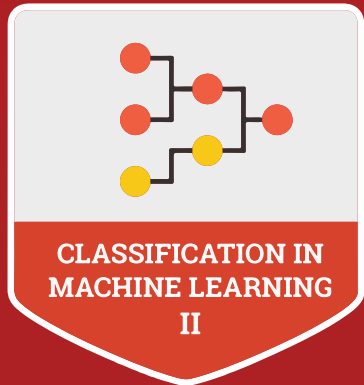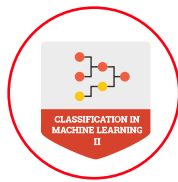- Parameterization

Learn-by-Building Modules

Module 1: Business Risk Analysis
Applying what you've learned, present a simple analysis and identify how the various variables can impact the risk of a business. Demonstrate how per-unit increment of a variable can lead to a change in odds and use basic plots to support your demonstration as necessary.

Module 2: Predicting Customer Segments
Develop a k-NN algorithm to sort B2B customers into one of 2 possible segments. Your algorithm must take the provided data as input, and achieve an accuracy of at least 90%. You may use feature engineering, rescaling, feature selection or other preprocessing techniques you've learned.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

REGRESSION MODELS

CLASSIFICATION IN MACHINE LEARNING I

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UNSUPERVISED MACHINE LEARNING

TIME SERIES AND FORECASTING

NEURAL NETWORK & DEEP LEARNING

CLASSIFICATION IN MACHINE LEARNING II

Classification in Machine Learning 2

Learn to apply the law of probabilities, boosting, bootstrap aggregation, k-fold cross validation, ensembling methods, and a variety of other techniques as we build some of the most widely used machine learning algorithms today. Learn to add performance to your models using mathematically sound principles you'll learn in this course.

We strongly recommend that you complete the Machine Learning: Classification 1 workshop prior to taking this course. Some concepts presented throughout the lecture may be less-than-ideal for practitioners who have not completed the pre-requisite courses.

3-Day Workshop Modules

Workshop Module 1: Classification Algorithms

Working with Probabilities
- Bayes Theorem
- Naive Bayes
- Laplace Smoothing
- Relation to Logistic Regression

Tree-based Models
- Decision Tree Intuition
- Pre-pruning and Post-pruning
- Splitting Criteria
- C.50 Algorithm

Practical Application
- Text Classification with Naive Bayes
- Laplace Smoother in Practice
- Decision Tree for interpretable model
- Techniques to improve model's accuracy

Workshop Module 2: High Performance Modules

Ensemble-based Methods
- Intuition: Why Ensemble works
- Model Blending Examples
- Relation to Random Forest

Random Forest
- Bootstrap Aggregation in Practice
- Automatic Feature Selection
- k-Fold Cross Validation

High-Performance Machine Learning
- Boosting (Weak Learners)
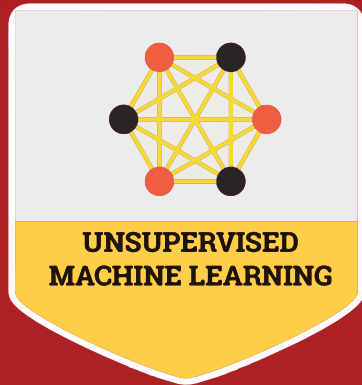- Competitive Machine Learning
- Parallel Computing with R

Learn-by-Building Modules

Module 1: Spam Filter
Applying what you've learned, build a spam classification model using the appropriate text mining measures as necessary and the Naive Bayes algorithm. Point out the weakness and limitations of your spam filter as well as the strengths.

Module 2: Random Forest Classification
Using random forest and the appropriate pre-processing steps, build a classifier that takes as input a high-dimensional training data (say, more than 150+ variables) and observe the automatic variable selection feature. Explain the random forest, including why its out-of-bag (oob) error rate is a reliable, unbiased estimate of our model's performance on unseen data.

PROGRAMMING FOR
DATA SCIENCE

PRACTICAL
STATISTICS

REGRESSION MODELS

CLASSIFICATION IN
MACHINE LEARNING
I

CLASSIFICATION IN
MACHINE LEARNING
II

UNSUPERVISED
MACHINE LEARNING

TIME SERIES AND
FORECASTING

NEURAL NETWORK
& DEEP LEARNING

Unsupervised Machine Learning

UNSUPERVISED MACHINE LEARNING

Learn PCA (Principal Component Analysis), Clustering, and other algorithms to work with unsupervised machine learning tasks where the target variable is not known or defined. Applying what you'll learn from this workshop, you will be tasked to develop an anomaly detection or an e-commerce product recommendation model that can be related to real-life business scenarios.

We strongly recommend that you complete the pre-requisite courses prior to taking this course. Some concepts presented throughout the lecture may be less-than-ideal for practitioners who are new to the field of machine learning.

3-Day Workshop Modules

Workshop Module 1: Unsupervised Learning I

Dimensionality
- The Curse of Dimensionality
- Principal Component Analysis
- PCA Calculation by hand

Dimensionality II
- Thinking about Variance
- Linear Discriminant Analysis
- LDA vs PCA (Unsupervised)

Unsupervised Learning in Action
- Cluster Analysis
- Social Network Analysis
- Market Segmentation

Workshop Module 2: Unsupervised Learning II

Anomaly Detection
- Clustering Methods
- k-Means
- k-Means++

Association Rules
- Association Rules Discovery
- Market-Basket Analysis
- Project Brief: Product Recommendation

Learn-by-Building Modules

Module 1: You May Also Like...
Applying what you've learned, build a product recommendation algorithm that would be used in an e-commerce site. Your algorithm should take any combination of basket items and return an appropriate "You May Also Like" suggestion list to the user.

Module 2: Fraud Detection
Develop a PCA-based analysis using New York City's Property Valuation and Assessment Data (containing more than 1 million properties) to highlight any property suspicious of fraudulent activities, such as deliberate undervaluation for tax purpose or exceedingly inflated valuation that should be flagged for closer inspection.

Time Series And Forecasting

TIME SERIES AND FORECASTING

Decomposition of time series allows us to learn about the underlying seasonality, trend and random fluctuations in a systematic fashion. In this workshop, we learn the methods to account for seasonality and trend, work with autocorrelation models and create industry-scale forecasts using modern tools and frameworks.

We strongly recommend that you complete the pre-requisite workshops prior to taking this course. Some concepts presented throughout the lecture may be less-than-ideal for practitioners who have not completed the pre-requisite courses.

3-Day Workshop Modules

Workshop Module 1: Understanding Time Series

Working with Time Series
- Additive Time Series
- Multiplicative Time Series
- Charasteristics
- Log-Transformation

Decomposition
- Adjusting for Trend & Seasonality
- SMA for non-seasonal data
- Two-sided SMA
- Tips and Techniques

More on Time Series
- Understanding lags
- Autocorrelation & Partial-autocorrelation
- Stationary Time Series
- Augmented Dickey-Fuller Test

Workshop Module 2: Forecasting Models

Forecasting I
- Exponential Smoothing
- Exponential Smoothing Calculation
- Plotting Forecasts

Forecasting II
- Multiple-Seasonality
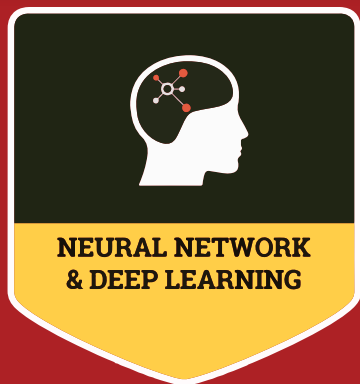- Holt-Winters Exponential Smoothing
- SSE & Forecasting Errors

Forecasting III
- Correlogram and Lags
- Confidence and Prediction Interval
- Tips and Techniques

Learn-by-Building Modules

Module 1: Crime Forecast
Combine your data visualization skills with what you've learned about forecasting to produce a report that analyze dataset of crimes in Chicago (2001-2017, by City of Chicago) and present your forecast.

PROGRAMMING FOR DATA SCIENCE

PRACTICAL STATISTICS

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CLASSIFICATION IN MACHINE LEARNING I

CLASSIFICATION IN MACHINE LEARNING II

UNSUPERVISED MACHINE LEARNING

TIME SERIES AND FORECASTING

NEURAL NETWORK & DEEP LEARNING

Neural Network & Deep Learning

NEURAL NETWORK & DEEP LEARNING

Develop artificial neural networks that can recognize face, handwriting patterns and are at the core of some of the most cutting-edge cognitive models in the AI landscape. We will learn to create a backpropagation neural network from scratch, and use our neural network for classification tasks. This class is the final course in the Machine Learning Specialization.

We strongly recommend that you complete the pre-requisite workshops prior to taking this course. Some concepts presented throughout the lecture may be less-than-ideal for practitioners who have not completed the pre-requisite courses.

3-Day Workshop Modules

Workshop Module 1: Neural Networks

Understanding Neural Network
- Neural Network Intuition
- Biological Inspiration
- Layers and Neurons
- Weights and Bias

Activation Function
- Sigmoid Function
- Softmax
- ReLu
- Incorporation to neuralnet

Workshop Module 2: Deep Learning

Building a Neural Network
- Architecture Design
- Parameterization
- Cost Function
- Feedforward Algorithm
- Backpropagation
- Refresher on Matrix Algebra

Deep Learning
- Tensor Flow
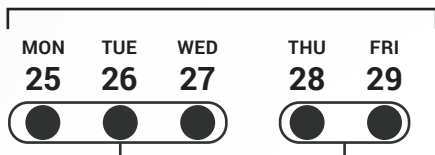- Deep Learning in R
- Practical Advice on Deep Learning

Learn-by-Building Modules

Module 1: Image Classification
Build a neural network capable of classifying images into one of many classes and explain the choice of your architecture. Test your neural network using unseen images – can your algorithm correctly classify 80% of images?
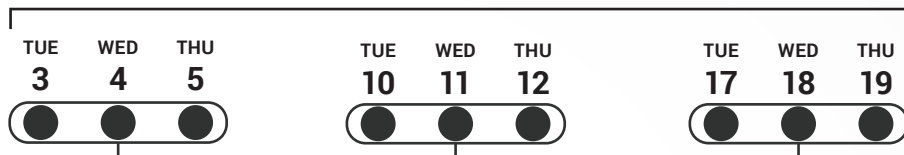
ALGORITMA ACADEMY

June

MON	TUE	WED
25	26	27

Programming for Data Science

THU	FRI
28	29

Practical Statistics

TUE	WED	THU
3	4	5

Data Visualization in R

July

TUE	WED	THU
10	11	12

Interactive Plotting & Dynamic Dashboards

TUE	WED	THU
17	18	19

Data Visualization Capstone Project

August
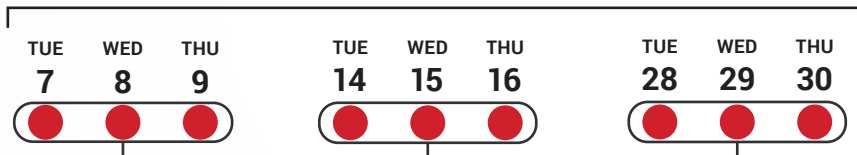
TUE	WED	THU
7	8	9

Regression Models

TUE	WED	THU
14	15	16

Classification in Machine Learning I

TUE	WED	THU
28	29	30

Classification in Machine Learning II

September

TUE	WED	THU
4	5	6

Unsupervised Machine Learning

WED	THU	FRI
12	13	14
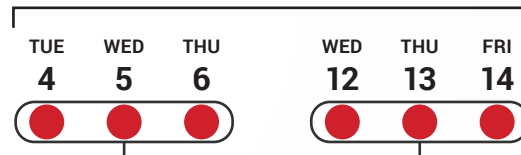
Time Series & Forecasting

September

TUE	WED	THU
18	19	20

Neural Network & Deep Learning

TUE	WED	THU
25	26	27
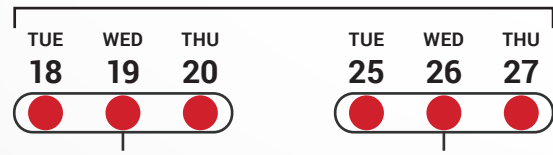
Machine Learning Capstone Project

All Classes **6PM - 9PM**

- ● Machine Learning Specialization
- ● Data Visualization Specialization

COHORT

CHRONOS

IDR 14.000.000

DATA VISUALIZATION SPECIALIZATION

MACHINE LEARNING SPECIALIZATION

IDR 26.000.000

FULL TRACK

DATA VISUALIZATION SPECIALIZATION

MACHINE LEARNING SPECIALIZATION

IDR 35.000.000

PAYMENT METHODS

BANK TRANSFER

Bank Name :
BCA
Account Number :
7660.3825.55
Account Holder :
PT. Algoritma Data Indonesia

Down Payment 20%

Full Payment 5 working days before academy

KOINWORKS

0.75% - 1.25%
(flat interest per month)

Facilities fee **2-4%**
Insurance fee **0.24%**
Admin fee **Rp 100,000**
Duration 12 to 24 months
Repayment without penalty