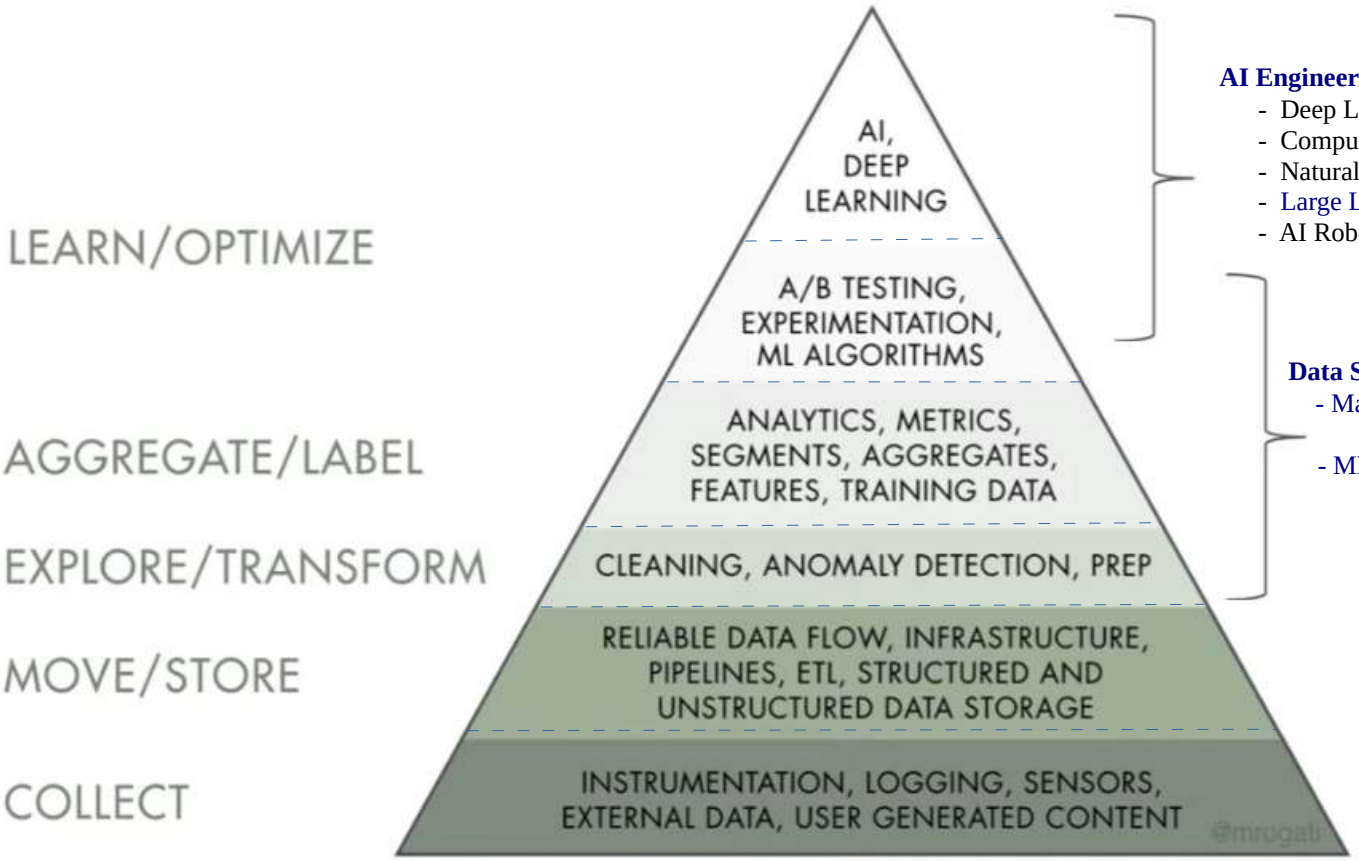
FULL-STACK/ FULL-PIPELINE

DATA SCIENCE

Full-Stack or Full-Pipeline Data Science

based from the

Data Hierarchy Of Needs



AI Engineer
- Deep Learning Engineer
- Computer Vision Engineer
- Natural Language Processing Engineer
- Large Language Model Engineer
- AI Robotics Engineer

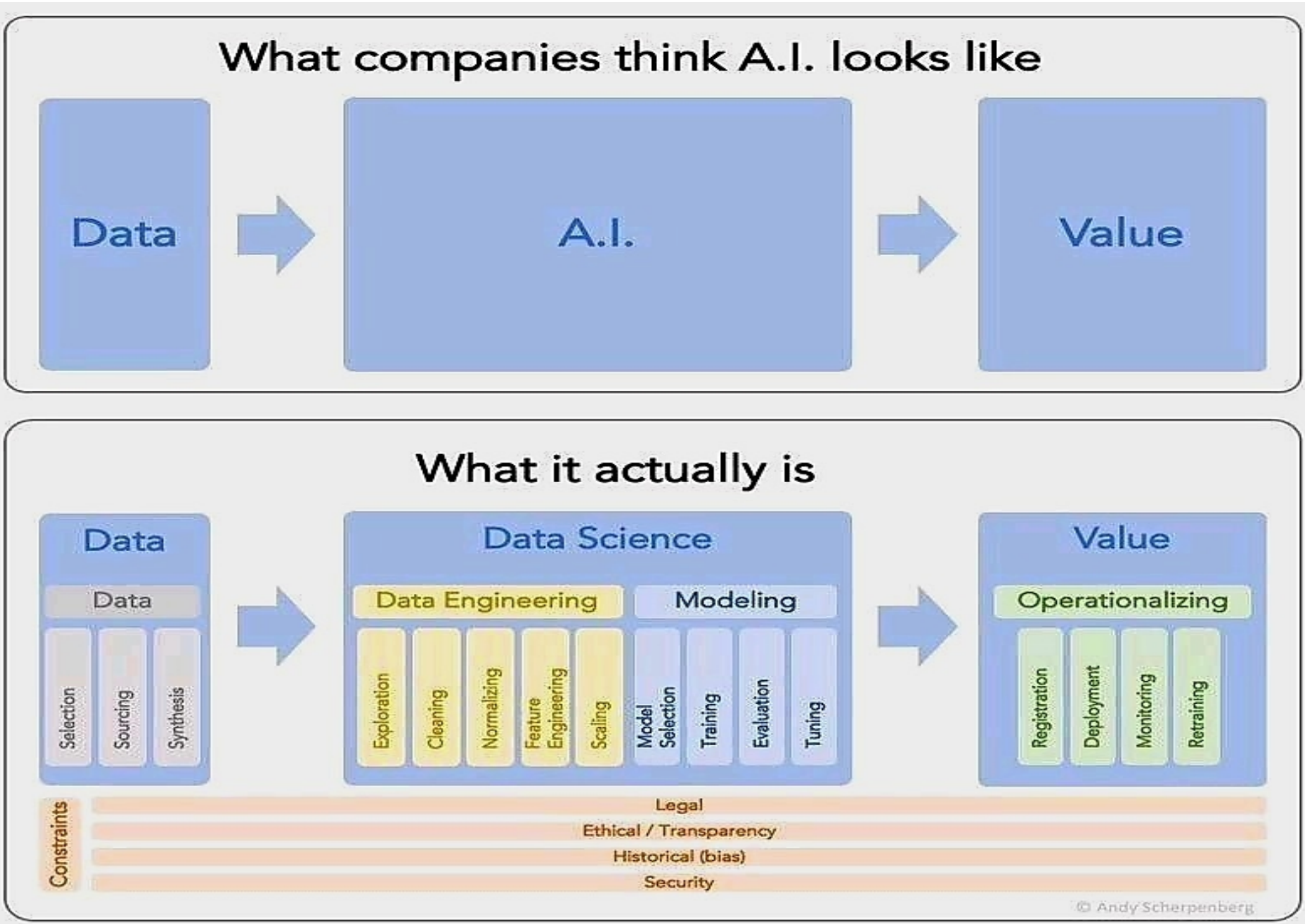
Data Scientist
- Machine Learning Engineer
- MLOps Engineer

Data Analyst
- Business Analyst
- Business Intelligence Analyst

Data Engineer
- Big Data Engineer
- Data Warehouse Engineer
- Business Intelligence Engineer

Foundational Skills:
- Foundational Mathematics for Machine Learning
- Foundational Programming Language for Data Science Pipelines Automation

Note: Click the highlighted texts in navyblue to verify the Certificates/ Certifications digital credentials.


What companies think A.I. looks like
Data
A.I.
Value
What it actually is
Data
Data
Selection
Sourcing
Synthesis
Data Science
Data Engineering
Exploration
Cleaning
Normalizing
Feature Engineering
Scaling
Modeling
Model Selection
Training
Evaluation
Tuning
Value
Operationalizing
Registration
Deployment
Monitoring
Retraining
Constraints
Legal
Ethical / Transparency
Historical (bias)
Security
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IBM Data Engineering Professional Certificate

Professional

Business Intelligence and Data Warehousing Specialization

Advanced

Big Data, NoSQL, and Spark Foundations Specialization

Data Engineering Foundations

Verify each IBM Digital Credentials thru Credly-Acclaim by clicking each badge.

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13 Courses

- Introduction to Data Engineering
- Python for Data Science, AI & Development
- Python Project for Data Engineering
- Introduction to Relational Databases (RDBMS)
- Databases and SQL for Data Science with Python
- Hands-on Introduction to Linux Commands and Shell Scripting
- Relational Database Administration (DBA)
- ETL and Data Pipelines with Shell, Airflow and Kafka
- Getting Started with Data Warehousing and BI Analytics
- Introduction to NoSQL Databases
- Introduction to Big Data with Spark and Hadoop
- Data Engineering and Machine Learning using Spark
- Data Engineering Capstone Project

Jun 11, 2023

Erwin Pasia

has successfully completed the online, non-credit Professional Certificate

IBM Data Engineering

In this Professional Certificate, learners developed essential knowledge and skills to perform the many tasks in an entry-level data engineering role. By completing over a dozen courses in the program, the earner of this Professional Certificate has demonstrated a firm grasp on and practical experience with fundamentals of Relational Databases, Database Architecture, Design, & Administration, Data Warehousing, Querying databases with SQL and BI Tools, ETL with Python Programming language and Shell Scripts, NoSQL, and Big Data processing using Apache Spark. Learners have applied all these skills to complete a Capstone Project involving the design, deployment and management of a complete data engineering platform inspired by a real-world data analytics requirements scenario.

Rav Ahuja, Program Director, IBM Skills Network

Verify this certificate at: https://coursera.org/verify/professional-cert/FMDQYV7QHMBP

7 Courses

- **Introduction to Data Engineering**
- **Introduction to Relational Databases (RDBMS)**
- **Databases and SQL for Data Science with Python**
- **Hands-on Introduction to Linux Commands and Shell Scripting**
- **Relational Database Administration (DBA)**
- **ETL and Data Pipelines with Shell, Airflow and Kafka**
- **Getting Started with Data Warehousing and BI Analytics**

Jun 11, 2023

Erwin Pasia

has successfully completed the online, non-credit Professional Certificate

IBM Data Warehouse Engineer

In this program, learners developed and honed the essential skills for designing, loading, managing and querying relational databases and data warehouses. Completers of this Certificate should be able to: Compose various types of SQL statements and queries to access and manipulate data in databases; Deploy, Secure, Operationalize, Monitor and Optimize relational database systems like MySQL, PostgreSQL, and DB2; Build Data Pipelines to extract, transform and load data repositories using shell scripts, and tools such as Apache Airflow & Kafka; Design and populate Data Warehouses and analyze their data with Business Intelligence (BI) tools like Cognos Analytics. The certificate holder should now be ready to take on the challenges of an entry-level role in Data Warehouse Engineering.

Rav Ahuja,
Global Program Director,
IBM Skills Network

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https://coursera.org/verify/professional-cert/G9YGE46HEWLR

8 Courses

- **Foundations: Data, Data, Everywhere**
- **Ask Questions to Make Data-Driven Decisions**
- **Prepare Data for Exploration**
- **Process Data from Dirty to Clean**
- **Analyze Data to Answer Questions**
- **Share Data Through the Art of Visualization**
- **Data Analysis with R Programming**
- **Google Data Analytics Capstone: Complete a Case Study**

Nov 16, 2022

Erwin Pasia

has successfully completed the online, non-credit Professional Certificate

Google Data Analytics

Those who earn the Google Data Analytics Professional Certificate have completed eight courses, developed by Google, that include hands-on, practice-based assessments and are designed to prepare them for introductory-level roles in Data Analytics. They are competent in tools and platforms including spreadsheets, SQL, Tableau, and R. They know how to prepare, process, analyze, and share data for thoughtful action.

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3 Courses

Mathematics for Machine Learning: Linear Algebra

Mathematics for Machine Learning: Multivariate Calculus

Mathematics for Machine Learning: PCA

Imperial College London

Jun 11, 2023

Erwin Pasia

has successfully completed the online, non-credit Specialization

Mathematics for Machine Learning

A sequence of 3 courses on the prerequisite mathematics for applications in data science and machine learning. Successful participants learn how to represent data in a linear algebra context and manipulate these objects mathematically. They are able to summarise properties of data sets and map them onto lower dimensional spaces with principal component analysis. Finally they can solve optimisation problems and use this skill to train models for describing data such as simple neural networks.

David Dye
Professor of Metallurgy
Department of Materials
Imperial College London

Samuel J. Cooper
Lecturer
Dyson School of Design Engineering
Imperial College London

Marc Deisenroth
Senior Lecturer
Department of Computing
Imperial College London

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DeepLearning.AI

COURSE CERTIFICATE

Jul 28, 2023

Erwin Pasia

has successfully completed

Probability & Statistics for Machine Learning & Data Science

an online non-credit course authorized by DeepLearning.AI and offered through Coursera

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Luis Serrano, Instructor, Serrano Academy. Anshuman Singh, Curriculum Product Manager, DeepLearning.AI. Elena Sanina, Curriculum Engineer, DeepLearning.AI. Magdalena Bouza, Curriculum Developer, DeepLearning.AI. Obed Nsiah, Curriculum Developer. Lucas Coutinho, Curriculum Developer, DeepLearning.AI

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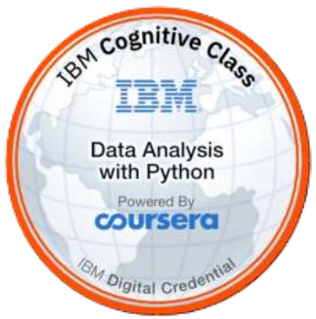
Coursera has confirmed the identity of this individual and their participation in the course.

IBM Data Science Professional Certificate (V2)

Professional

Specialization



Intermediate

Foundational

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10 Courses

- What is Data Science?
- Tools for Data Science
- Data Science Methodology
- Python for Data Science, AI & Development
- Python Project for Data Science
- Databases and SQL for Data Science with Python
- Data Analysis with Python
- Data Visualization with Python
- Machine Learning with Python
- Applied Data Science Capstone

Jan 23, 2023

Erwin Pasia

has successfully completed the online, non-credit Professional Certificate

IBM Data Science

In this Professional Certificate, learners developed and honed hands-on skills in Data Science and Machine Learning. Learners started with an orientation of Data Science and its Methodology, became familiar and used a variety of data science tools, learned Python and SQL, performed Data Visualization and Analysis, and created Machine Learning models. In the process they completed several labs and assignments on the cloud including a Capstone Project at the end to apply and demonstrate their knowledge and skills.

Rav Ahuja
AI & Data Science
Program Director
IBM Skills Network

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https://coursera.org/verify/professional-cert/3F62TM7PSHP2

4 Courses

AWS Cloud Technical Essentials

DevOps on AWS: Code, Build, and Test

DevOps on AWS: Release and Deploy

DevOps on AWS: Operate and Monitor

Jun 20, 2023

Erwin Pasia

has successfully completed the online, non-credit Specialization

DevOps on AWS

DevOps on AWS specialization teaches you how to use the combination of DevOps philosophies, practices and tools to develop, deploy, and maintain applications in the AWS Cloud. Benefits of adopting DevOps include: rapid delivery, reliability, scalability, security and improved collaboration.

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4 Courses

Python Essentials for MLOps

DevOps, DataOps, MLOps

MLOps Platforms: Amazon SageMaker and Azure ML

MLOps Tools: MLflow and Hugging Face

May 18, 2023

Erwin Pasia

has successfully completed the online, non-credit Specialization

MLOps | Machine Learning Operations

The student has successfully completed the Specialization, laying a strong foundation in Python fundamentals, MLOps principles, data management, and the deployment of machine learning models in production environments. The student acquired hands-on experience with Amazon Sagemaker, AWS, Azure, MLflow, and Hugging Face, developing their ability to create end-to-end ML solutions, pipelines, and APIs. The student has also learned to: apply exploratory data analysis techniques; use AI pair programming and GitHub Copilot; train, optimize, and deploy ML models on Amazon SageMaker and Azure ML; design full MLOps pipelines with MLflow, managing projects, models, and tracking system features; and deploy Large Language Models and containerized models using the ONNX format with Hugging Face.

Noah Gift, Executive in Residence in the Duke Social Science Research Institute

Alfredo Deza, Adjunct Assistant Professor in the Pratt School of Engineering

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4 Courses

Introduction to Machine Learning in Production

Machine Learning Data Lifecycle in Production

Machine Learning Modeling Pipelines in Production

Deploying Machine Learning Models in Production

Aug 12, 2023

Erwin Pasia

has successfully completed the online, non-credit Specialization

Machine Learning Engineering for Production (MLOps)

Congratulations! You have completed all four courses of Machine Learning Engineering for Production (MLOps) Specialization. In this Specialization, you learned how to conceptualize and maintain integrated systems. You mastered well-established tools and methodologies to build production systems that can handle relentless evolving data and continuously run at maximum efficiency. You're now familiar with the capabilities, challenges, and consequences of machine learning engineering in production and are ready to level up your career by participating in the development of leading-edge AI technology and solving real-world problems.

Andrew Ng,
Founder,
DeepLearning.AI

Robert Crowe
TensorFlow Developer
Engineer, Google

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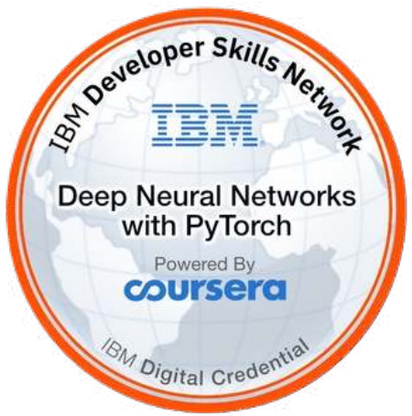
IBM AI Engineering Professional Certificate (V2)



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Optional Course.
Only available in version 1.

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6 Courses

Machine Learning with Python

Introduction to Deep Learning & Neural Networks with Keras

Introduction to Computer Vision and Image Processing

Deep Neural Networks with PyTorch

Building Deep Learning Models with TensorFlow

AI Capstone Project with Deep Learning

May 10, 2023

Erwin Pasia

has successfully completed the online, non-credit Professional Certificate

IBM AI Engineering

Learners who have completed this 6 course Professional Certificate have a practical understanding of Machine Learning (ML) & Deep Learning (DL). They have technical skills to start a career in AI Engineering, and can: • Implement ML algorithms including Classification, Regression, Clustering, and Dimensional Reduction using scipy & scikitlearn • Perform ML on Big Data and deploy ML Algorithms and Pipelines on Apache Spark • Demonstrate understanding of Deep Learning models such as autoencoders, restricted Boltzmann machines, convolutional networks, recursive neural networks, and recurrent networks • Build deep learning models and neural networks using Keras, PyTorch and Tensorflow libraries • Demonstrate ability to present and communicate outcomes of deep learning projects

Rav Ahuja
AI & Data Science
Program Director
IBM Skills Network

Verify this certificate at:
https://coursera.org/verify/professional-cert/3A3NEYR6X6FC

DeepLearning.AI

COURSE CERTIFICATE

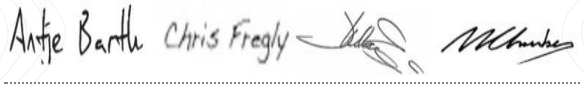
Jul 18, 2023

Erwin Pasia

has successfully completed

Generative AI with Large Language Models

an online non-credit course authorized by DeepLearning.AI, Amazon Web Services and offered through Coursera



Antje Barth, Chris Fregly
Shelbee Eigenbrode, Mike Chambers

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Coursera has confirmed the identity of this individual and their participation in the course.

Google Cloud

COURSE CERTIFICATE

Jun 28, 2023

Erwin Pasia

has successfully completed

Introduction to Generative AI

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

Jun 22, 2023

Erwin Pasia

has successfully completed

Introduction to Large Language Models

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

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Erwin Pasia

has successfully completed

Introduction to Responsible AI

an online non-credit course authorized by Google Cloud and offered through Coursera

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Introduction to Image Generation

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Google Cloud

COURSE CERTIFICATE

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Erwin Pasia

has successfully completed

Encoder-Decoder Architecture

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

Jun 29, 2023

Erwin Pasia

has successfully completed

Attention Mechanism

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Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

Jun 28, 2023

Erwin Pasia

has successfully completed

Transformer Models and BERT Model

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

Jun 30, 2023

Erwin Pasia

has successfully completed

Create Image Captioning Models

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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Google Cloud

COURSE CERTIFICATE

Jun 30, 2023

Erwin Pasia

has successfully completed

Introduction to Generative AI Studio

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

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