Artificial Intelligence Analyst

(Online and Classroom)

Career path description

The Artificial Intelligence career path prepares students to apply AI in real-life. This will require skills in Cognitive Computing, Natural Language Processing (NLP), Conversation (Chatbots), and Computer vision. Training topics will include AI, IBM Watson, hands-on and case studies on NLP, Chatbots, and Vision.
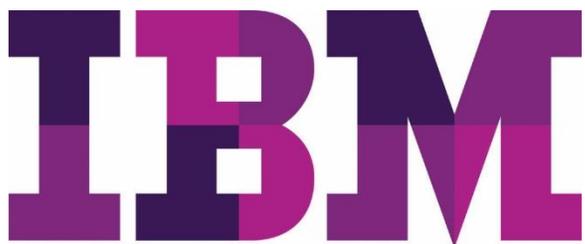
ibm.com/training

General information

Version
2017

Product
IBM Watson

Learning objectives

After completing this course, you should be able to:
- Describe the field of AI and its subfields machine learning, NLP and computer vision
- Describe the types of AI
- List the factors that influenced the advancements of AI in recent years
- List applications of AI
- Explain what Machine Learning is
- Describe the types of machine learning: Supervise learning, unsupervised learning, and deep learning
- Explain neural networks
- Explain what NLP is and list its applications
- Explain what computer vision is and list its applications
- Explain what cognitive computing is and list the key characteristics of cognitive system
- Explain what IBM Watson is and how it works
- Explain how Watson technology is made available to developers and organizations
- Describe how Watson technology is being applied to solve real world problems
- Describe the evolution of Watson services from the original DeepQA architecture to the present
- List the Watson services available on the IBM Cloud
- Explain the capabilities of each Watson service
- Describe the purpose of training the various Watson services to adapt them to a closed-domain
- Use Watson API Explorer to interact with the Watson services REST API, to rest your calls to the API and to view live responses from the server
- Define NLP, its history, applications and use cases
- Understand the relationship between AI and NLP
- Define NLP tools and services, the NLP pipeline
- Gain hands-on experience with NLP
- Define chatbots
- Explain the factors that lead to the growing popularity of chatbots
- Identify applications that are good candidates to integrate with chatbots
- Describe the main components that are involved when building a chatbot and explain their purpose
- Describe how to build a chatbot by using the IBM Watson Conversation service
- Define what Computer Vision is
- Know the history and advancement of Computer Vision
- Identify some of the tools and services of Computer Vision
- Understand Computer Vision components
- Define the Vision pipeline.
- Learn about the Vision services that are available from IBM Watson.
- Create a service and train it to identify images.

Prerequisites Skills
- English Proficiency
- Exposure to the IBM Skills Academy Portal learning environment

Skill level

Basic – Intermediate

Hardware requirements

Classroom (ILT) setup requirements

Processor	Intel Core i7 CPU @ 2.7 GHz
GB RAM	4 GB
GB free disk space	40 GB
Network requirements	No
Other requirements	IBM ID

MODULE I – ARTIFICIAL INTELLIGENCE OVERVIEW

Course I – AI Overview

Unit 1. Introduction to Artificial Intelligence

Overview	This unit provides an understanding of AI, and its practical applications.
Learning objectives	After completing this unit, you should be able to: • Describe the eras of computing • Explain the difference between deterministic and probabilistic systems • Describe the types of AI • Explain what the main focus of AI is • List of practical applications of AI

Unit 2. Machine Learning

Overview	This unit introduces you to the basic concepts of Machine Learning
Learning objectives	After completing this unit, you should be able to: • Explain what machine learning is • Describe the types of machine learning • Explain what neural networks are and why they are important in today's AI's field • Explain what domain adaptation is and its applications

Unit 3. Natural Language Processing

Overview	This unit explains the concept of NLP and its applications.
Learning objectives	After completing this unit, you should be able to: • Explain what NLP is • Describe different NLP processes • List tools and services for NLP • Identify NLP use cases

Unit 4. Computer vision

Overview	This unit introduces you to the concept of CV and its applications.
Learning objectives	After completing this unit, you should be able to: • Define CV • Know the history of CV and its advancement with AI • List tools and services for CV • Identify CV use cases

Unit 5. Cognitive Computing

Overview	This unit introduces you to the concept of Cognitive Computing, its characteristics, and role in the industry.
Learning objectives	After completing this unit, you should be able to: • Explain what cognitive computing is • Describe the characteristics of cognitive systems • Explain the landscape of cognitive computing in the industry

Exercise 1. Setting up your hands-on environment

Overview	In this exercise, you will set up the artifacts that you need to run the hands-on labs in.
Learning objectives	After completing this unit, you should be able to: • Setup your IBM Bluemix Account

MODULE II – ARTIFICIAL INTELLIGENCE FOUNDATIONS

Course I – IBM Watson

Course introduction

Unit 1. Introduction to IBM Watson

Overview	In this unit, you will be introduced to IBM Watson, and how it's being applied to solve real-life problems.
Learning objectives	After completing this unit, you should be able to: • Explain what IBM Watson is and how it works • Explain how Watson technology is made available to developers and organizations • Describe how Watson technology is being applied to solve real world problems

Unit 2. Evolution from DeepQA to Watson services on IBM Cloud

Overview	In this unit, you will learn about DeepQA architecture, its evolution, and the types of Watson services available today.
Learning objectives	After completing this unit, you should be able to: • Explain what the DeepQA architecture was • Explain why IBM decided to commercialize Watson • Describe the evolution of Watson services from the original DeepQA architecture to the present • Recognize the Watson services available today on the IBM Cloud

Unit 3. Build with Watson

Overview	In this unit, you will be different types of IBM Watson services, their capabilities and purpose, and whether they can be trained or not.
Learning objectives	After completing this unit, you should be able to: • List the Watson services • Explain the capabilities of each Watson service • Describe the purpose of training the various Watson services to adapt them to a closed-domain • List the Watson services that can be trained • List the Watson services that cannot be trained • Describe what Watson Knowledge studio is • List the Watson services that can be trained with Watson Knowledge Studio • Use Watson API Explorer to interact with the Watson services REST API, to test your calls to the API, and to view live responses from the server.

Exercise 4. Exploring Watson services with Watson API Explorer

Overview	In this exercise, you will use Watson API Explorer to become familiar with some of the Watson services.
Learning objectives	After completing this exercise, you should be able to: • Use Watson API Explorer to become familiar with Watson services

MODULE III – ARTIFICIAL INTELLIGENCE ANALYST

Course I – Natural Language Processing

Course introduction

Unit 1. Introduction to Natural Language Processing

Overview	In this unit, you will learn about NLP, its processes, and the tools and services for it.
Learning objectives	After completing this unit, you should be able to: • Explain what NLP is • Describe different NLP processes • List tools and services for NLP • Identify NLP use cases

Unit 2. Pipeline and concepts

Overview	In this unit, you will learn about NLP and the processes that make it useful.
Learning objectives	After completing this demonstration, you should be able to: • Define different components of NLP • Define challenges within NLU • Explain the NLP pipeline • Explain the concepts of information extraction and sentiment analysis

Unit 3. NLP and IBM Watson

Overview	In this unit, you will learn how to apply your acquired knowledge to NLP applications by using the IBM Watson services on IBM Cloud.
Learning objectives	After completing this demonstration, you should be able to: • Define the capabilities of IBM Watson Natural Language Classifier (NLC) • Describe how to train Watson NLC • Define the capabilities of Watson Natural Language Understanding (NLU) service and its input and output, along with the discovery service • Explain the capabilities of the Watson Tone Analyzer service and its input and output

Exercise 4. Ingest, Convert, Enrich, and Query with Watson Discovery Service

Overview	In this exercise, you will ingest, convert, enrich, and query with Watson Discovery Service.
Learning objectives	After completing this exercise, you should be able to: • Create a Watson Discovery service instance • Create a collection • Add content to a collection • Build queries • Use the Discovery API

Course II – Chatbots

Unit 1. Introduction to Chatbots
Duration: 1 hour

Overview	This unit introduces you to chatbots, provides examples of chatbot applications, and explains the factors contributing to the growing popularity of chatbots.
Learning objectives	After completing this demonstration, you should be able to: • Explain what a chatbot is • Describe common applications of chatbots • Identify factors that drive the growing popularity of chatbots • List examples of tools and services that you can use to create chatbots

Unit 2. Chatbot fundamentals

Overview	This unit covers the core concepts that you need to understand to build a chatbot.
Learning objectives	After completing this unit, you should be able to: • What a workspace is • What an intent is • What an entity is • What a dialog is • What dialog nodes are • How the nodes in a dialog are triggered • How the dialog flow is processed • The advanced features of a chatbot

Unit 3. IBM Watson conversation service

Overview	This unit introduces you to the Watson Conversation service which is the primary service from IBM to create a chatbot. It walks you through building the chatbot core components with Watson Conversation.
Learning objectives	After completing this unit, you should be able to: • Create a workspace • Define intents • Define entities • Build a dialog

Exercise 4. Getting started with Watson Conversation Services

Overview	This exercise, introduces the Conversation tool and goes through the process of creating your first conversation.
Learning objectives	After completing this demonstration, you should be able to: • Create a Watson Conversation service instance • Create a Conversation workspace • Add intents • Build a dialog • Test in Slack

Course III – Computer Vision

Unit 1. Introduction to Computer Vision

Overview	In this unit, you will be introduced to CV, its history, and use cases.
Learning objectives	After completing this demonstration, you should be able to: • Define CV • Know the history of CV and its advancement with AI • List tools and services for CV • Identify CV use cases

Unit 2. Computer Vision fundamentals

Overview	In this unit, we describe the basic components of CV, understand from a high-level perspective how CV analyzes and processes the incoming image, and explore commonly used techniques.
Learning objectives	After completing this unit, you should be able to: • Define the main pipeline within a CV application. • Understand how feature extraction works. • Understand how image classification and recognition works. • Define known techniques and classifiers that are used today for CV.

Unit 3. IBM Watson Visual Recognition service

Overview	In this unit, you will be introduced you to the IBM Watson Visual Recognition service, its features, and output.
Learning objectives	After completing this exercise, you should be able to: • Describe the IBM Watson Visual Recognition service • List the features available with Watson Visual Recognition • Describe the output provided by the Watson Visual Recognition service • Explain the capabilities of the default classifier • Explain the difference between a default and a custom classifier • Describe how to train a custom classifier

Overview	In this exercise, you will learn how to use the default classifiers in IBM Watson Visual Recognition to classify an image, detect faces and recognize celebrities in an image.

Learning objectives	After completing this unit, you should be able to:
	• Create a Watson Visual Recognition service and obtain the API key value
	• Use Visual Recognition API methods to:
	    o Classify images
	    o Detect faces in an image
	    o Recognize text in an image
	• Create and train a custom classifier

IBM Official Badges and Associated Job Roles

IBM Official Badges	Artificial Intelligence: Explorer I Mastery Award
Associated Job Roles	• Cloud Application Developer • Data Scientist

For more information

To learn more about this career path and others, see **ibm.biz/ibmskillsacademy**

To learn more about validating your technical skills with IBM Open Badges, see www.youracclaim.com

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