uCertify

Course Outline

Artificial Intelligence on Amazon Web Services



28 Mar 2024

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1. Course Objective

Learn AI online with the Artificial Intelligence on Amazon Web Services course and lab. The lab is cloud-based, device-enabled, and can easily be integrated with an LMS. The AWS training course and lab cover some important topics in AI, such as image recognition, natural language processing, and speech recognition, and also provide a high-level understanding of AWS's AI and machine learning services and platforms. The course will guide you through the process of setting up Python, the AWS SDK, and web development tools.

2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

3. Quizzes

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



4. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



5. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



6. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

7. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

8. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

9. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution

2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution
    6. Best Postsecondary LMS or Learning Platform
    7. Best Learning Relationship Management Solution

- **2017**
    1. Best Overall Education Solution
    2. Best Student Assessment Solution
    3. Best Corporate/Workforce Learning Solution
    4. Best Higher Education LMS or Learning Platform

- **2018**
    1. Best Higher Education LMS or Learning Platform
    2. Best Instructional Solution in Other Curriculum Areas
    3. Best Learning Relationship Management Solution

- **2019**
    1. Best Virtual Learning Solution
    2. Best Content Authoring Development or Curation Solution
    3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

10. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

- Who this course is for
- What this course covers
- Conventions used

Chapter 2: Introduction to Artificial Intelligence on Amazon Web Services

- What is AI?
- Overview of AWS AI offerings
- Getting familiar with the AWS CLI

- Using Python for AI applications
- First project with the AWS SDK
- Summary
- References

Chapter 3: Anatomy of a Modern AI Application

- Understanding the success factors of artificial intelligence applications
- Understanding the architecture design principles for AI applications
- Understanding the architecture of modern AI applications
- Creation of custom AI capabilities
- Working with a hands-on AI application architecture
- Developing an AI application locally using AWS Chalice
- Developing a demo application web user interface
- Summary
- Further reading

Chapter 4: Detecting and Translating Text with Amazon Rekognition and Translate

- Making the world smaller

- Understanding the architecture of Pictorial Translator
- Setting up the project structure
- Implementing services
- Implementing RESTful endpoints
- Implementing the web user interface
- Deploying Pictorial Translator to AWS
- Discussing project enhancement ideas
- Summary
- Further reading

Chapter 5: Performing Speech-to-Text and Vice Versa with Amazon Transcribe and Polly

- Technologies from science fiction
- Understanding the architecture of Universal Translator
- Setting up the project structure
- Implementing services
- Implementing RESTful endpoints
- Implementing the Web User Interface
- Deploying the Universal Translator to AWS

- Discussing the project enhancement ideas
- Summary
- References

Chapter 6: Extracting Information from Text with Amazon Comprehend

- Working with your Artificial Intelligence coworker
- Understanding the Contact Organizer architecture
- Setting up the project structure
- Implementing services
- Implementing RESTful endpoints
- Implementing the web user interface
- Deploying the Contact Organizer to AWS
- Discussing the project enhancement ideas
- Summary
- Further reading

Chapter 7: Building a Voice Chatbot with Amazon Lex

- Understanding the friendly human-computer interface

- Contact assistant architecture
- Understanding the Amazon Lex development paradigm
- Setting up the contact assistant bot
- Integrating the contact assistant into applications
- Summary
- Further reading

Chapter 8: Working with Amazon SageMaker

- Technical requirements
- Preprocessing big data through Spark EMR
- Conducting training in Amazon SageMaker
- Deploying the trained Object2Vec and running inference
- Running hyperparameter optimization (HPO)
- Understanding the SageMaker experimentation service
- Bring your own model – SageMaker, MXNet, and Gluon
- Bring your own container – R model
- Summary
- Further reading

Chapter 9: Creating Machine Learning Inference Pipelines

- Technical requirements
- Understanding the architecture of the inference pipeline in SageMaker
- Creating features using Amazon Glue and SparkML
- Identifying topics by training NTM in SageMaker
- Running online versus batch inferences in SageMaker
- Summary
- Further reading

Chapter 10: Discovering Topics in Text Collection

- Technical requirements
- Reviewing topic modeling techniques
- Understanding how the Neural Topic Model works
- Training NTM in SageMaker
- Deploying the trained NTM model and running the inference
- Summary
- Further reading

Chapter 11: Classifying Images Using Amazon SageMaker

- Walking through convolutional neural and residual networks
- Classifying images through transfer learning in Amazon SageMaker
- Performing inference through Batch Transform
- Summary
- Further reading

Chapter 12: Sales Forecasting with Deep Learning and Auto Regression

- Technical requirements
- Understanding traditional time series forecasting
- How the DeepAR model works
- Understanding model sales through DeepAR
- Predicting and evaluating sales
- Summary
- Further reading

Chapter 13: Model Accuracy Degradation and Feedback Loops

- Monitoring models for degraded performance
- Developing a use case for evolving training data – ad-click conversion

- Creating a machine learning feedback loop
- Summary
- Further reading

Chapter 14: What Is Next?

- Summarizing the concepts we learned in Part I
- Summarizing the concepts we learned in Part II
- Summarizing the concepts we learned in Part III
- Summarizing the concepts we learned in Part IV
- What's next?
- Summary

11.  Practice Test

Here's what you get

50	50
PRE-ASSESSMENTS QUESTIONS	POST-ASSESSMENTS QUESTIONS

Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

12.  Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Introduction to Artificial Intelligence on Amazon Web Services

- Using the Amazon Rekognition Service
- Creating an Amazon S3 Bucket
- Installing Python on Linux
- Installing Python on Windows
- Creating a Python Virtual Environment and Project with the AWS SDK

Anatomy of a Modern AI Application

- Developing an AI Application Locally and a Demo Application Web User Interface
- Hosting an S3 Static Website

Detecting and Translating Text with Amazon Rekognition and Translate

- Using Amazon Translate

Performing Speech-to-Text and Vice Versa with Amazon Transcribe and Polly

- Using Amazon Transcribe and Polly

Extracting Information from Text with Amazon Comprehend

- Creating an Amazon DynamoDB Table
- Using Amazon Comprehend

Building a Voice Chatbot with Amazon Lex

- Using Amazon Lex to Build a Chat Box

Working with Amazon SageMaker

- Creating a Model

Creating Machine Learning Inference Pipelines

- Using AWS Glue

Discovering Topics in Text Collection

- Using Amazon SageMaker Notebook Instance
- Building and Training a Machine Learning Model
- Creating an Endpoint Configuration

Sales Forecasting with Deep Learning and Auto Regression

- Using Lifecycle Configurations in SageMaker

Here's what you get

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LIVE LABS

13. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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