



Task 4.1: Design and deploy model using Azure machine learning

This document supplies detailed information on Assessment Task 4.1 for this unit.

Key information

- **Due: Monday 17 April 2022 by 8.00 pm (AEST)**
- **This assignment is graded (from Pass to Distinction), and you can submit this assignment only once and there is no chance of resubmission.**
- **Please Specify your Target grade for this task and answer the question based on your target grade.**

Overview:

During week 4, we have discussed how you can build and deploy a ML model using Azure ML Studio. This task will help you to understand how to design and deploy an AI-based solution on a cloud and what are the key elements for integration into different applications.

To do this assignment, you need to refer to Week4 lecture and workshop contents.

Submission Details:

The students who target **Pass and Credit (P or C):** For this task you need to design and deploy a machine learning model using Azure ML studio. You need to use Microsoft Azure Machine Learning Studio to design and deploy your model. To complete this task, you need to select a dataset and design a decision tree model (classification tree or regression tree) and then deploy the built model and get the API key. To do this task you need to follow the workshop recording and slides and deploy your own model on Azure. You need to provide the screenshots of your designed model and the performance of the built model (e.g., Accuracy, confusion matrix and etc) and deployed model with the API key.

The students who target **Distinction (D):** For this task you need to answer two parts.

Part1: design and build two machine learning model using decision tree and Random Forest based on Azure ML studio. To complete this task, you need to select a dataset

and design a decision tree (classification tree or regression tree) and a Random Forest model for the selected dataset, compare them and then deploy the best model and get the API key of the best model. To do this task you need to follow the workshop recording and slides and deploy your own model on Azure. You need to provide the screenshots of your designed models and the performance of the built models (e.g., Accuracy, confusion matrix and etc) and deployed model with the API key. You need to provide a discussion what is the best model and why.

Part2: you need to explore Azure Machine learning services and find out how we can apply a machine learning model using Python SDK. You need to answer the following parts:

1. What is the Azure Machine Learning SDK for Python?
2. What is Workspace? How to create a workspace for machine learning using [Azure Portal](#)?
3. You need to log in using your Deakin email to your Azure portal and create a workspace under your resource group. We have created a resource group using university subscription and you should be able to see your resource group. Provide a screen shot for this part.
4. Create your computing instance and cluster and explain what those parts are. Provide a screenshot of your created computing instance and cluster.

The students who target High Distinction (HD): For this task you need to answer two parts.

Part1: design and build two machine learning model using decision tree and Random Forest based on Azure ML studio. To complete this task, you need to select a dataset and design a decision tree (classification tree or regression tree) and a Random Forest model for the selected dataset, compare them and then deploy the best model and get the API key of the best model. To do this task you need to follow the workshop recording and slides and deploy your own model on Azure. You need to provide the screenshots of your designed models and the performance of the built models (e.g., Accuracy, confusion matrix and etc) and deployed model with the API key. You need to provide a discussion what is the best model and why.

Part2: You need to use Azure Machine learning Python SDK to train and deploy your best built model (Decision tree or Random Forest) in part1. To complete this task you need to login to your [Azure Portal](#) and create your workspace for machine learning and then train your model (you can use the model you built in week 2 or train a new model using your selected dataset) and then deploy the model on Azure. You should be able to access to both free and subscription resource group in your account. You can use either of them. You need to provide a screen shot of your built workspace, the built model using Python and how you have deploy the model using Azure Python SDK.

Submission details to OnTrack:

- **Submit your answers as a PDF file into the Ontrack. You need to mention your target grade at the beginning of your submission and provide the related answer based on your target grade.**

Instruction:

1. Review the seminar week4 (slides and videos) and follow them to design and deploy your ML on Azure.
2. You need to provide a document includes screenshot of your designed and deployed model(s) and the endpoints of your deployment.
3. Submit the task to Ontrack.

Submission details

Deakin University has a strict standard on plagiarism as a part of Academic Integrity. To avoid any issues with plagiarism, students are strongly encouraged to run the similarity check with the Turnitin system, which is available through Unistart. A Similarity score **MUST NOT** exceed 39% in any case. **No marking on any submission after due date.**

Extension requests

Requests for extensions should be made to Unit/Campus Chairs well in advance of the assessment due date. If you wish to seek an extension for an assignment, you will need to submit a request using the OnTrack system as soon as you become aware that you will have difficulty in meeting the scheduled deadline, but at least 3 days before the due date. When you make your request, you must include appropriate documentation (medical certificate, death notice) and a copy of your draft assignment. Conditions under which an extension will normally be approved include:

Medical To cover medical conditions of a serious nature, e.g., hospitalisation, serious injury or chronic illness. Note: Temporary minor ailments such as headaches, colds and minor gastric upsets are not serious medical conditions and are unlikely to be accepted. However, serious cases of these may be considered.

Compassionate e.g. death of close family member, significant family and relationship problems.

Hardship/Trauma e.g., sudden loss or gain of employment, severe disruption to domestic arrangements, victim of crime. Note: Misreading the timetable, exam anxiety or returning home will not be accepted as grounds for consideration.

Special consideration

You may be eligible for special consideration if circumstances beyond your control prevent you from undertaking or completing an assessment task at the scheduled time. See the following link for advice on the application process: <http://www.deakin.edu.au/students/studying/assessment-and-results/special-consideration>

Assessment feedback

The results with comments will be released within 5 business days from the due date.

Referencing

You must correctly use the Harvard method in this assessment. See the Deakin referencing guide.

Academic integrity, plagiarism and collusion

Plagiarism and collusion constitute extremely serious breaches of academic integrity. They are forms of cheating, and severe penalties are associated with them, including cancellation of marks for a specific assignment, for a specific unit or even exclusion from the course. If you are ever in doubt about how to properly use and cite a source of information refer to the referencing site above.

Plagiarism occurs when a student passes off as the student's own work, or copies without acknowledgement as to its authorship, the work of any other person or resubmits their own work from a previous assessment task.

Collusion occurs when a student obtains the agreement of another person for a fraudulent purpose, with the intent of obtaining an advantage in submitting an assignment or other work.

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