AI Lab 1: Prebuilt ML Models from Azure and how can you self learn the platform

1. Browse to **https://AiDemos.microsoft.com**
2. Open **Text Analytics** demo and execute step by step guided demo.
3. Go back to AI Demos portal.
4. Open **Computer Vision** demo and execute step by step guided demo.
5. Go back to AI Demos portal.
6. Open **Video Indexer** Demo and execute step by step guided demo.

7. Now browse to **https://AiSchool.microsoft.com**
8. Under **AI Houses** Select **AI Services** tab and select **Learning Paths**
9. For **FACE API** select **Learn more** and then **Get Started** then **Overview**
10. This is an example how you can learn about any pre-trained consumable API accessible ML models available at Azure.

11. Finally browse to **https://Learn.microsoft.com** and **Explore**
12. Select **Browse All Paths** then under **Roles f**ilter select **AI Engineer** and **Data Scientist** roles
13. This is an example how Azure Learning platform has step by step learning paths available for self learning.

14. Go top of the page and select **Certifications** then Browse **Certifications**
15. Look for **AI-100** and **DP-100** certifications
16. This is an example how you can execute focused certified upskilling paths on Azure.

AI Lab2: Build ML Models Automatically using Azure Machine Learning Workspace service

1. Open Azure portal - https://Portal.Azure.com
2. Using top Search Bar, search for **Machine Learning**
3. Select Machine Learning from services section
4. Add new service by filling out the form. (Hint: select **Enterprise** tier for **Workspace Edition** field)
5. Once service is created select the service **Overview** page and select **Launch** workspace portal.
6. Using workspace portal select **Automated ML**
7. Create **New Automated ML Run**
8. **Create dataset** using **from local files** (Hint: Download sample data locally to use if needed. It is a csv inside zip file.)
9. Go to **Next** step give it a experiment name such as **myautomlexperiement1**
10. Select **Mean Charge** for **Target Column**
11. Select **Create a new compute** name it **computeinstance1**, select **any single vCPU machine size**, min **0** and max **1 nodes**.
12. Select new compute instance as **training instance**.
13. Select **Regression algorithm** and Finish.
14. Select **Automated ML menu** item then select **your experiment** then select the **Run** then select **Models**
15. After few minutes you will see multiple pretrained models start appearing here**. Click any model and observe the details**.
16. Select the Run one more time using Automate ML menu and click this time on **Details tab** where you can ask Azure to **deploy best model** for you automatically among many being dropped inside Models.
17. This is an example how with minimal knowledge you can build the ML model as long as you understand your data's characteristics.

AI Lab3: Using Custom Vision Modeling Service.

1. Open custom vision services portal – http://CustomVision.ai
2. Sign-in and **create new project.**
    1. Enter project name **minivanvsjeep1**
    2. **Create new** custom vision service
    3. Select **project types** -> classification.
    4. Select **classification types** -> Multiclass.
    5. Domains **General** -> Compact
3. Download sample images file from here https://github.com/ChefGillani/ChefLabs/raw/master/CustomVisionFiles.zip
4. Unzip the file.
5. Upload 5 minivan images with "**minivan"** tag. Don't upload minivan6.png, that one we will keep for testing the model.
6. Upload 5 jeep images with **"jeep"** tag. Don't upload jeep6.jpg.
7. **Train the model** using train button on top right menu bar. (Hint: select quick testing type to save time)
8. Do **Quick Test** by uploading minivan6 image and check **prediction** box
9. Repeat the test with **jeep6** image.
10. Repeat the test with **bike1** image.
11. Close the testing window and click on **Train** menu item.
12. Click on **Export** option where you can download the trained custom vision model and use it on compact devices and compatible ML platfoms such as ONNX.

AI Lab4: Azure Data Science Virtual Machine for ML Model Development using Python / Jupyter Notebooks platform.

1. Open Azure portal – https://portal.azure.com
2. Select **Create New Resource** using a **hamburger menu icon** on the top left of the portal.
3. Search for **Data Science Virtual Machine (CentOS)** option.
4. Fill the provisioning form and launch the provisioning.
   (Hint: any single vCPU machine size would be enough for this demo)
5. Once provisioned, go to the **overview** page of new DSVM instance.
6. Figure out the **Public IP address** assigned to this machine.
7. Open the Jupyter notebooks application on you new DSVM using http://yourmachineip:8000.
8. Login using the **admin credentials** you assigned using provisioning Form.
9. Got **azureml->python** folder and open Jupyter notebook **digit_classification.ipynb**
10. Run **each cell by clicking on cell** and pressing **ctrl + enter** step by step.
11. By the completion of all cell runs, you will notice a python based ML model **score.py** is ready to deploy.

AI Lab5: Try Azure Databricks with Spark, Python and SQL.

Skip Step 1 but then follow all Steps here at Microsoft Docs for Azure Databricks.