AI on IBM Z

Health insurance claims solution template

This solution template provides an example on how to deploy AI using an IBM Z environment, while making use of open source frameworks, Machine Learning for IBM z/OS (MLz), and more.

Within this solution template, there are various phases of the AI lifecycle included. Work through each of the following steps to deploy your own health insurance claims solution on IBM Z.

IBM

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Step 1

AI model training

We will build a health insurance claims AI model by training with the provided Rapid AI on IBM Z Development Jupyter notebook. Simply point the Jupyter notebook to your dataset and run it to generate your AI model. This trained AI model can then be deployed with MLz.

All sample code for this section is within

```
ai-st-health-insurance-claims/zST-model-training-jupyter
```

Prerequisites

1. Must have Python (3.9 or 3.10) installed

Dataset guidance

Sample health insurance claims dataset can be found on Kaggle -

https://www.kaggle.com/datasets/grvmishra7/health-insurance-prediction?select=train_Df64byy.csv

Required features

- applicant_id
- years_of_insurance_with_us
- regular_checkup_last_year
- adventure_sports
- occupation
- visited_doctor_last_1_year
- cholesterol_level
- daily_avg_steps
- age
- heart_decs_history
- any_other_major_decs_history
- gender
- avg_glucose_level
- bmi
- smoking_status
- year_last_admitted
- location
- weight
- covered_by_any_other_company
- alcohol
- exercise
- weight_change_in_last_one_year
- fat_percentage
- insurance_cost

Access rapid AI on IBM Z development environment

1. Create and activate Python virtual environment

```
python -m venv env
source env/bin/activate
```

2. Install required Python packages

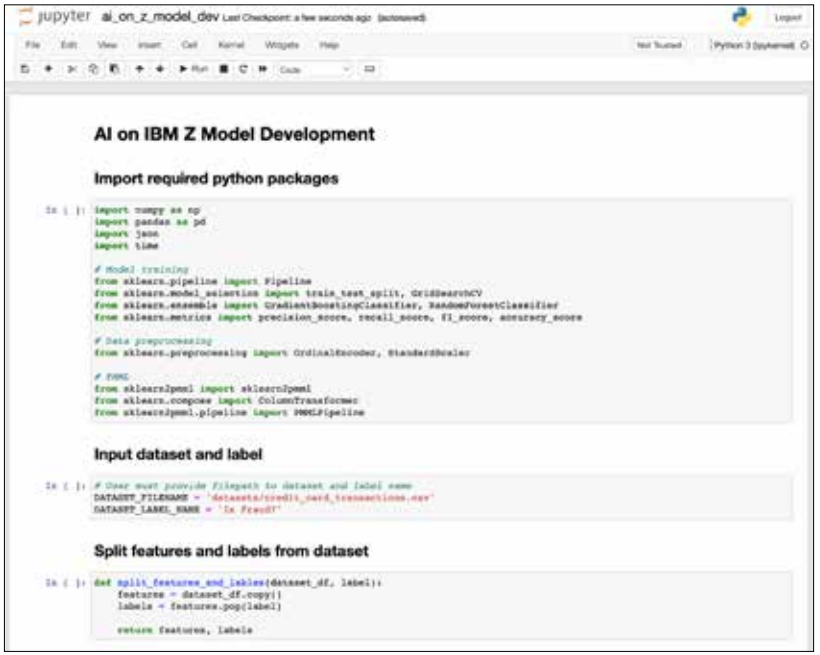
```
pip install -r requirements.txt
```

3. Run Jupyter

```
jupyter notebook
```

4. View Jupyter interface
   Go to localhost:8888 in a web browser

5. Click on ai_on_z_model_dev.ipynb in web browser

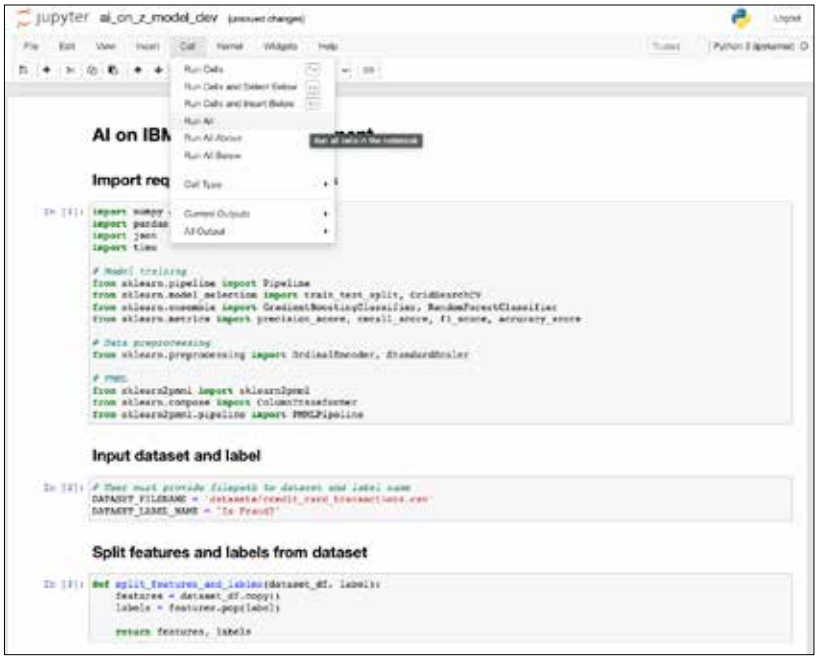


Provide data

1. Add your input dataset (csv) into datasets/ directory
2. Add input data to Jupyter notebook
   - Set DATASET_FILENAME to the path to your dataset
   - Set DATASET_LABEL_NAME to the name of the column you're predicting from the dataset

Model training

1. Step through and run Jupyter notebook from web browser



Access trained AI model

1. Once training is complete, you can find your AI models within the models/directory (choose one for the following AI model deployment step)

AI model training complete

Step 2

AI model deployment

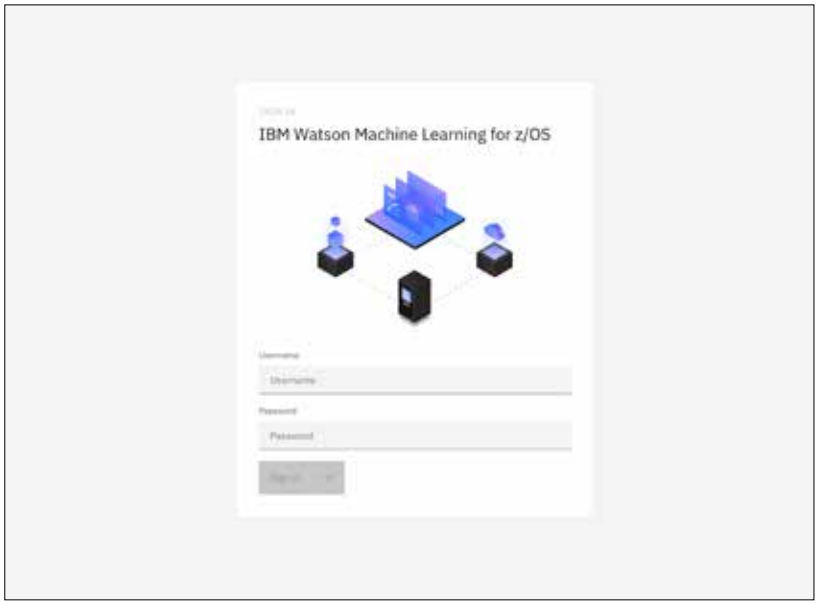
We will deploy our health insurance AI model using MLz. We can utilize the model import functionality on the MLz UI. This deployed AI model can then be integrated into applications within the IBM Z environment.

Prerequisites

1. Must have MLz installed

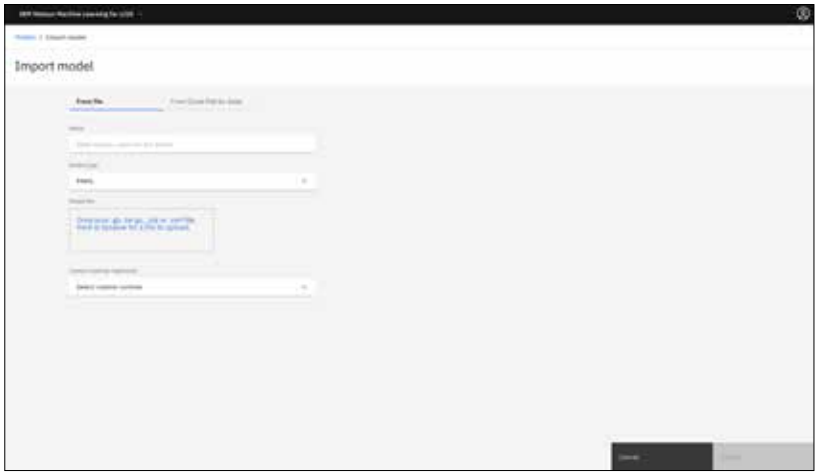
Go to MLz UI

1. Sign in with username/password



Import AI model

1. Go to models tab
2. Click import model
3. Enter model name
4. Choose model type
   Choose PMML if using your previously trained model
5. Drag and drop model file
   Use your previously trained model
6. Click import

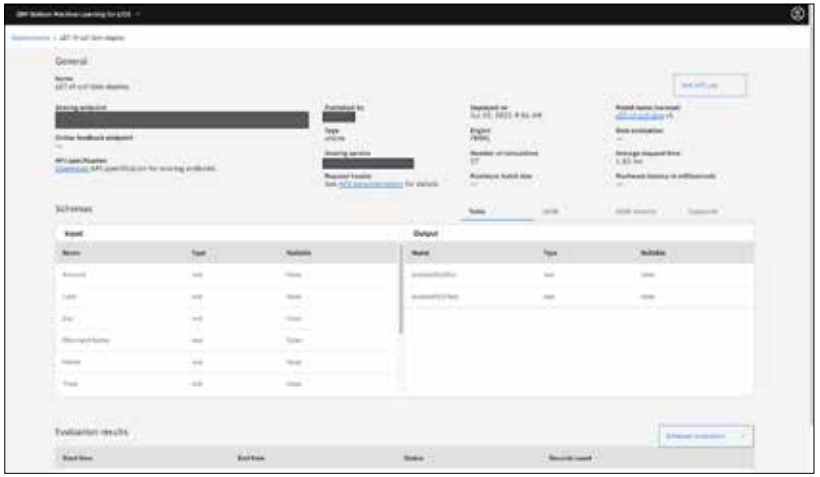


Deploy AI model

1. Go to models tab
2. Click action button for your model (on right side)
3. Click deploy
4. Enter deployment name
5. Choose deployment type
6. Choose model version
7. Choose scoring service
   Note: you should choose the correct scoring service based on your application (e.g. CICS or REST)
8. Click create

View deployed AI model

1. Go to deployments tab
2. Click on action button for your deployed model (on right side)
3. Click view details



AI model deployment complete

Step 3

AI model integration

We can use our deployed MLz health insurance claims AI model and integrate it into different types of applications. Guidance on integrating the AI model into a sample health insurance claims application is below.

All sample code for this section is within

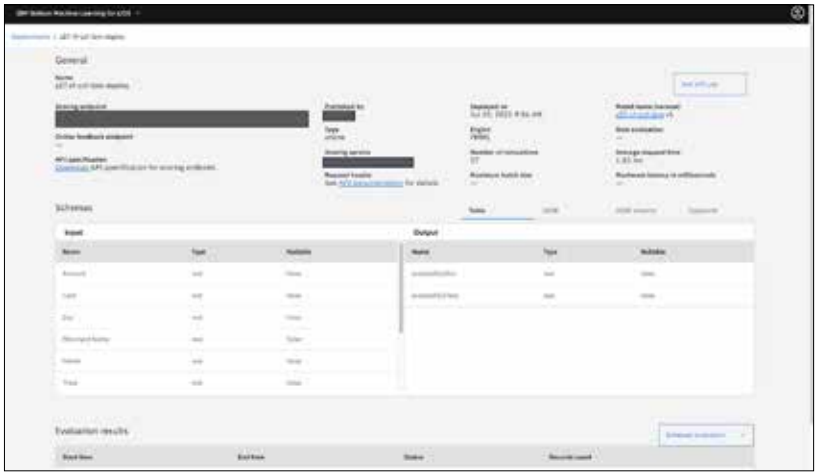
```
ai-st-health-insurance-claims/zST-model-integration-HIC
```

Prerequisites

1. Must have node.js v16 or newer installed
2. Must have Docker installed
3. Must have Git installed

Get model details for inferencing

1. Go to MLz UI
2. Go to deployments tab
3. Click on action button for your deployed model (on right side)
4. Click view details
5. Copy scoring endpoint



Configure sample application

Set the enrionment variables within env.list file

- WML_URL (MLz UI URL)
- WML_USER (username for MLz)
- WML_PASS (password for MLz user)
- SCORING_URL (scoring endpoint for deployed AI model)

Build sample application

1. Run command in terminal

```
docker build -t health-insurance .
```

Deploy sample application

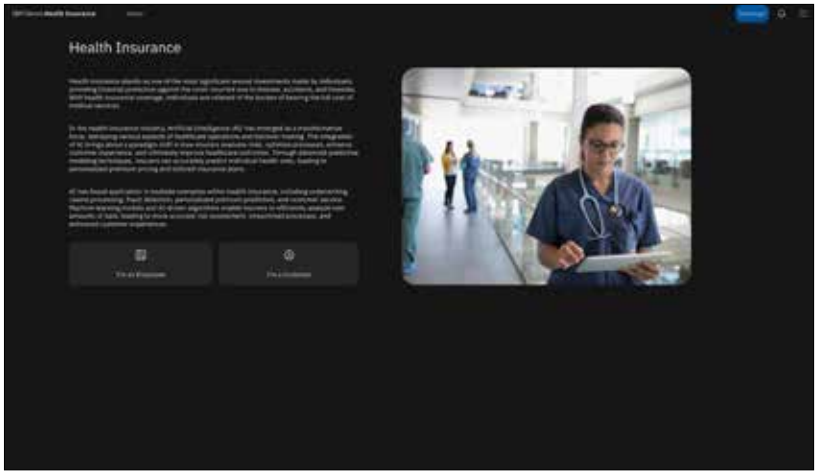
1. Run command in terminal (e.g. port 9000)

```
docker run -p 9000:80 --env-file env.list
--name health-insurance-app -d health-in-
surance
```

Access sample application

View the following URL in a web browser: http://{ip address}:{port}/ui

- ip address: IP of server you deployed application in
- port: port you used with docker run



AI model integration complete