2021 DIGI+ & TCA
AI Recommendation

Present by Jay Su

Caloudi

Privacy Issue
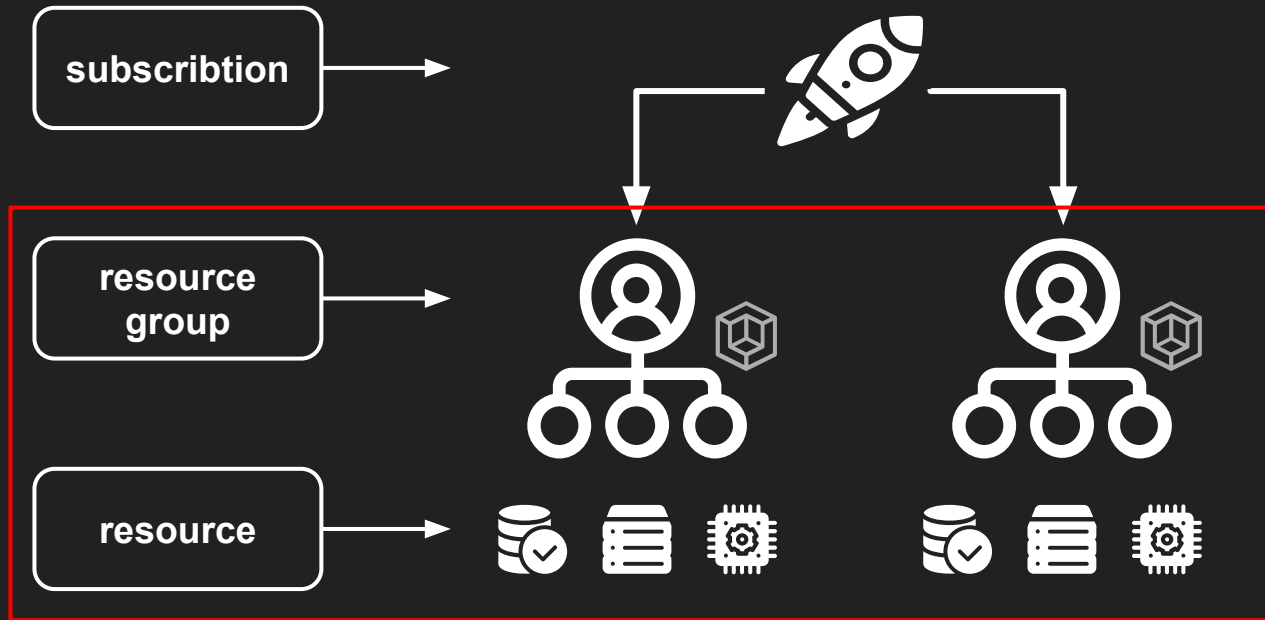
5 保密義務：
乙方於聘僱期間取得之營業秘密，乙方無論於任職期間或本契約終止後，均不得：
5.1 向任何人揭露，除經甲方事前之書面許可或依法須揭露者；
5.2 經由任何媒介以任何形式複製或重製任何營業秘密，或允許第三人取得、複製或重製該營業秘密；
5.3 為乙方或甲方以外之第三人之利益，使用任何營業秘密；
5.4 因未盡注意或忠誠義務致使營業秘密洩漏予他人。

Caloudi

Azure service

subscribtion →

resource group →

resource →

- Usage of **virture machine** will be the basic unit for analysis
- Horizontal level such as resource group is a crucial component for app design.

Caloudi

Billing plan : EA & RI

- **What's different ?**
  - EA, aka **Enterprise Agreement** → Pay as you go, billing by hour
  - RI, aka **Reverse Instance** → 1year or 3year plan by committing
- **Case study 1**

DS1	24 hours
DS1	12 hours

EA	RI
$3.5 / per hour	$2 / per hour

1. All EA → (24 * 3.5) + (12 * 3.5)= 126
2. EA + 1RI → (24 * 2) + (12 * 3.5) = 90
3. 2RI → (24 * 2) + (24 * 2) = 96

Caloudi

Billing plan : EA & RI

- Case study 2 (flexibility group)

DS1	24 hours
DS2	12 hours

	EA	**RI**
DS1	$3.5 / per hour	$2 / per hour
DS2	$7 / per hour	$4 / per hour

1. All EA → (24 * 3.5) + (12 * 7)= 168
2. DS1 RI + DS2 EA → (24 * 2) + (12 * 7) = 132
3. 2 DS1 RI → (24 * 2) + (24 * 2) = 96
4. 2 DS2 RI → (24 * 4) + (24 * 4) = 192

Caloudi

Problem statement

- Azure provides recommendations based on historical data only, which is not flexible enough for **future** planning. Hence, a robust and powerful **forecasting model** will be strongly required.
- By designing such model, we will able to building more extention application based on forecasting output. ex. optimization algorithm.

Caloudi

AI Recommendation

- According to Caloudi CMP, an ideal AI recommendation system should be like a smart engine which has capability to analyze user's historical usage pattern and provide good solutions. → **keep the cost down**

Usage pattern (historical)	Data Science	Recommendation
• Timestamps • Resorce group • Usage hour	• Time series analysis or forecating	• Rule based • optimization algorithm • AI model
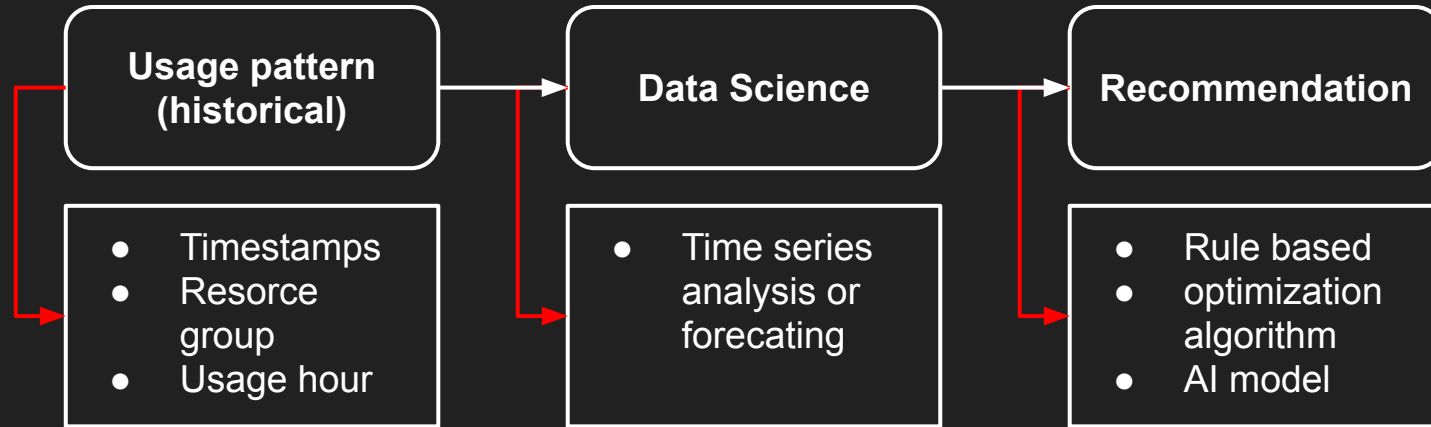
Time line & Goal

- Week1(9/13)-Week6(10/18)
    - Data analysis & preprocessing
    - Survey for forecasting model

- Week7(10/25)-Week11(11/22)
    - Forecasting model tunning
    - Recommendation output & Visualization

Caloudi

Dataset overview

- VM-Usage.csv
- AzureISFRatio_20xx-xx-x.csv
- azure-ri-pricesheet_20xx-xx-xx.csv

Enviroment setting

Step1 : Activate anoconda and creat a new enviroment with python 3.6

  → conda creat --name AI_recom python == 3.6

Step2 : pip install -r requirements.txt

❖ requirements.txt → numpy, pandas, matplotlib, tensorflow, scikit-learn, statsmodel

Caloudi

Discussion