

# Personalizer Demo

# Preparation

- Create free Azure/Microsoft account
  - <https://azure.microsoft.com/en-us/free/>
- Install python and pip
- Clone demo repository
  - <https://github.com/VowpalWabbit/icml2019>
- Install client wheel package
  - [Download client wheel package](#)
  - `pip install azure_cognitiveservices_personalizer-0.2.0-py2.py3-none-any.whl`

# Documentation

- Personalizer Docs:
  - <https://docs.microsoft.com/en-us/azure/cognitive-services/personalizer/>
- API References:
  - <https://westus2.dev.cognitive.microsoft.com/docs/services/personalizer-api/operations/Rank>
- More Examples:
  - <https://github.com/Azure-Samples/cognitive-services-personalizer-samples>

# Create Personalizer Instance

The image is a composite of three screenshots from the Azure portal illustrating the process of creating a Personalizer instance.

**Left Screenshot:** Shows the 'New' page in the Azure portal. The 'Create a resource' button in the left-hand navigation menu is highlighted with a red box. The search bar at the top of the main content area contains the text 'Personalizer (Preview)', which is also highlighted with a red box.

**Middle Screenshot:** Shows the 'Personalizer (Preview)' page. The 'Create' button, located below the Microsoft logo, is highlighted with a red box. The breadcrumb navigation at the top reads: 'Dashboard > Cognitive Services > AI + Machine Learning > Personalizer (Preview)'.


**Right Screenshot:** Shows the 'Create' configuration page for the Personalizer instance. The configuration fields are as follows:

- Name:** icml\_demo
- Subscription:** [Redacted]
- Location:** (US) West US 2
- Pricing tier:** F0 (50K Transactions per month)
- Resource group:** [Redacted]

The checkbox for 'I confirm I have read and understood the notice below.' is checked. At the bottom, there is a 'Create' button and a link for 'Automation options'.

# Settings

[Dashboard](#) > [icml\\_demo - Settings](#)

**icml\_demo - Settings**  
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Save

Discard

Refresh

[Read more about setting rewards.](#)

Rewards are sent by your application after a Personalization event to train the Personalization model event.

Reward wait time ⓘ

Days	Hours	Minutes	Seconds
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="10"/>	<input type="text" value="0"/>

Default reward ⓘ

Reward aggregation ⓘ

Earliest

### Exploration

[Reads more about choosing exploration proportion.](#)

Personalization is able to discover new patterns and adapt to user behavior changes over time by exploring alternatives.

% of Rank calls to use for exploration

40

### Model update frequency

How often should the model be updated?

Days	Hours	Minutes	Seconds
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="5"/>	<input type="text" value="0"/>

### Data retention

No logs found

How long should log date be retained? (days)

# Send events

Dashboard > icml\_demo - Keys

**icml\_demo - Keys**  
Cognitive Services

Search (Ctrl+ /)

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Regenerate Key1 Regenerate Key2

NAME
icml_demo
KEY 1
KEY 2

```
33 client = PersonalizerClient(endpoint="https://westus2.api.cognitive.microsoft.com/",
34                             credentials=CognitiveServicesCredentials("")) # Put your credentials here
35
36 #Available content
37 actions=[
38     models.RankableAction(
39         id='politics',
40         features=[{'topic': 'politics'}]),
41     models.RankableAction(
42         id='sports',
43         features=[{'topic': 'sports'}]),
44     models.RankableAction(
45         id='music',
46         features=[{'topic': 'music'}]
47     )]
```

# Verify data was logged successfully

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Reward aggregation ⓘ  
Earliest ▼

**Exploration**

[Reads more about choosing exploration proportion.](#)

Personalization is able to discover new patterns and adapt to user behavior changes over time by exploring alternatives.

% of Rank calls to use for exploration  
40

**Model update frequency**

How often should the model be updated?

Days	Hours	Minutes	Seconds
0	0	5	0

**Data retention**

Logs available from 6/5/2019-6/5/2019

How long should log date be retained? (days)  
Enter number of days

# Counterfactual evaluation

- What is counterfactual evaluation?
  - “What if” analysis
  - Visualize different policies
  - Only use online experimentation data



# Create counterfactual evaluation

Dashboard > Cognitive Services > icml-demo - Evaluations

## icml-demo - Evaluations

Cognitive Services

Search (Ctrl+/,)

+ Create evaluation Delete evaluation

We are actively creating a dedicated instance for you. Please be patient while provisioning completes.

The effectiveness of the Personalizer Loop can be evaluated with a technique called Counterfactual Evaluation.  
[Learn more about Counterfactual Evaluations.](#)

NAME	START DATE	END DATE	STATUS
Click Create Evaluation to create an evaluation.			

**Left Sidebar:**

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## Create an evaluation

\* Name

evaluation1



\* Start date ⓘ

2019-06-06



\* End date ⓘ

2019-06-06



### Additional evaluation options

#### Optimization Discovery

Discover a more optimal learning policy? ⓘ

Yes

No

#### Compare additional learning policies

You can optionally compare the performance of your model with the performance of additional learning policies.

[Add Policy](#)

LEARNING POLICY

Ok

# View counterfactual evaluation

Dashboard > icml\_demo - Evaluations

icml\_demo - Evaluations  
Cognitive Services

Search (Ctrl+/)

+ Create evaluation - Delete evaluation

The effectiveness of the Personalizer Loop can be evaluated with a technique called Counterfactual Evaluation.  
[Learn more about Counterfactual Evaluations.](#)

<input type="checkbox"/>	NAME	START DATE	END DATE	STATUS
<input type="checkbox"/>	evaluation1	6/6/2019	6/6/2019	completed

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Dashboard > icml\_demo - Evaluations > Evaluation Summary

## Evaluation Summary

---

Name  
evaluation1

Status  
completed

Start Date  
6/6/2019

End Date  
6/6/2019

**Evaluation Results**

Comparison of different learning policies

# Use Case (demo)

	Tom	Anna
Monday	Politics	Sports
Sunday	Music	Politics



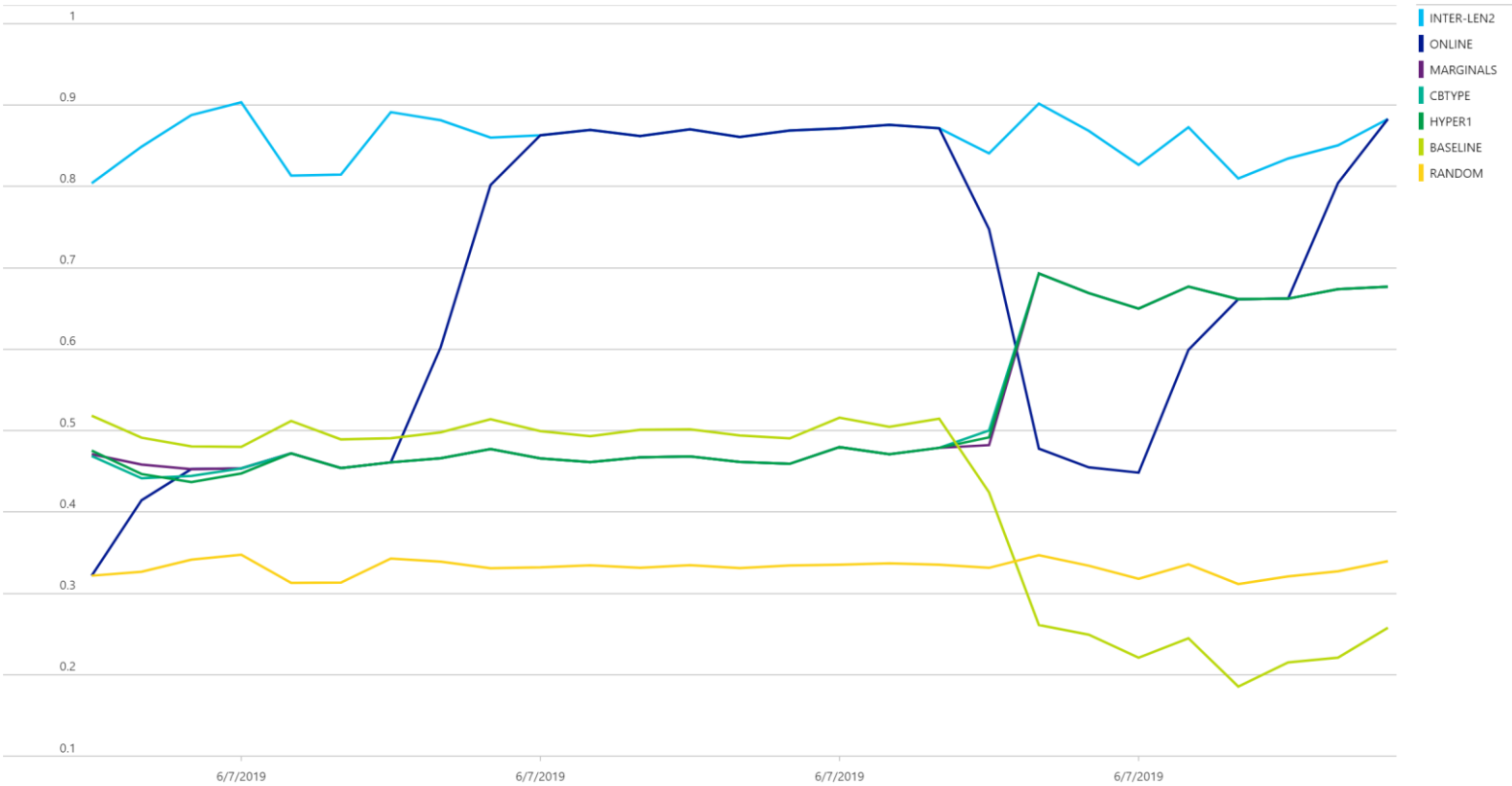
	Tom	Anna
Monday	Politics	Sports
Sunday	Sports	Sports

# Results

Evaluation Results

Learning Policy Comparison				
LEARNING POLICY	SOURCE	AVERAGE REWARD	CONFIDENCE INTERVAL (P95)	DOWNLOAD
Inter-len2	Uploaded	0.86102	0.85150 - 0.87054	<a href="#">Download</a>
Online	Current Learning Policy of this Personalizer Loop	0.67561		
Marginals	Uploaded	0.52820	0.52281 - 0.53359	<a href="#">Download</a>
cbType	Uploaded	0.52790	0.52245 - 0.53334	<a href="#">Download</a>
Hyper1	Uploaded	0.52732	0.52185 - 0.53279	<a href="#">Download</a>
Baseline	First action sent to Rank by the app	0.41478	0.40897 - 0.42060	
Random	Randomly generated ranks	0.33160	0.32793 - 0.33527	

Average Reward vs Time (UTC)




# Different way of making decision, how would it perform

- if system choose action at random
- if system always choose first action
- if system is configured with different parameters

# Import new policy

[Dashboard](#) > [icml\\_demo - Model and Policy](#)

**icml\_demo - Model and Policy**  
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**Model**

The Personalizer model is a file that captures what the service learnt with the current learning policy, since the model was created.

Model created  
6/6/2019, 2:07:32 PM

Model last updated  
6/6/2019, 2:07:32 PM

Export model

**Learning policy**

Learning policies are machine learning settings that determine how the service learns from events.

Export learning policy

Import learning policy

Select a file

Upload

**Data**

Clear data