

Shiny Application

Cases sharing





Hello !

I am Kristen Chan

Data Scientist
E-Commerce / Telecom
R-Ladies Taipei
Co-Organizer



Shiny Application

1. **Introduction to Shiny**
2. **Case Sharing**
 - a. **Deploy Recommended system via Shiny**
 - i. Project introduction -- poverty escape
 - ii. How does it work?
 - b. **Azure ML via Shiny**
 - i. What is Azure Machine Learning Studio ?
 - ii. How to connect with Shiny ?
 - c. **R-Ladies Taipei Kaggle Leaderbord via Shiny**
 - i. What is Kaggle?
 - ii. How does shiny help us?



Introduction to Shiny

Introduction to Shiny

- ✓ Shiny is a package from Rstudio
- ✓ It's a web development framework in R.
- ✓ It can be easy to build interactive web applications with R.

You don't need to know following tools:

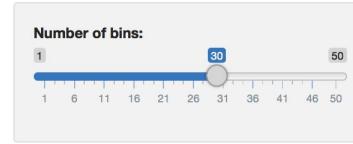
- ✗ Html
- ✗ Javascript
- ✗ CSS

Hello Shiny

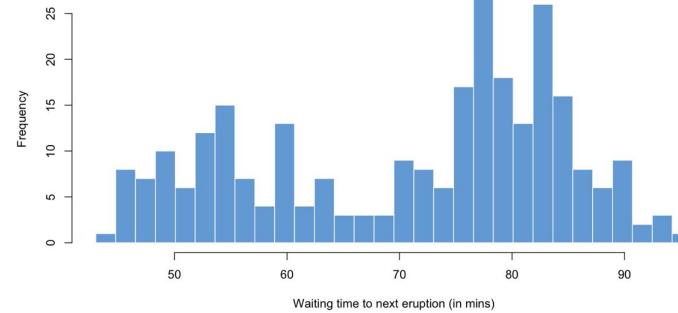


```
library(shiny)  
runExample("01_hello")
```

Hello Shiny!



Histogram of waiting times



Hello Shiny!

by RStudio, Inc.

This small Shiny application demonstrates Shiny's automatic UI updates.

Move the *Number of bins* slider and notice how the `renderPlot` expression is automatically re-evaluated when its dependant, `input$bins`, changes, causing a histogram with a new number of bins to be rendered.

app.R

↓ show with app

```
library(shiny)

# Define UI for app that draws a histogram ----
ui <- fluidPage(
  # App title ----
  titlePanel("Hello Shiny!"),

  # Sidebar layout with input and output definitions ----
  sidebarLayout(
    # Sidebar panel for inputs ----
    sidebarPanel(
      # Input: Slider for the number of bins ----
      sliderInput(inputId = "bins",
                  label = "Number of bins:",
                  min = 1,
                  max = 50,
                  value = 30)
    ),
    # Main panel for displaying outputs ----
    mainPanel(
      # Render plot ----
      renderPlot(function() {
        hist(faithful$waiting, bins = input$bins)
      })
    )
  )
)
```

A Shiny Project

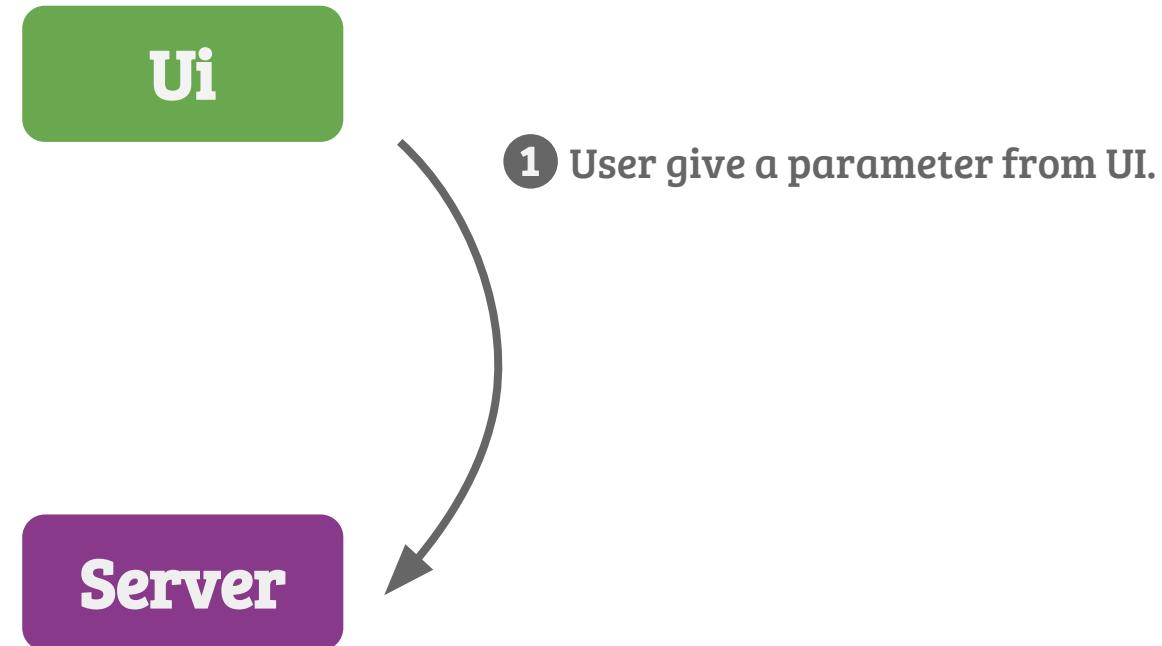
✓ **Ui**

- User interface
- Determine how your app looks

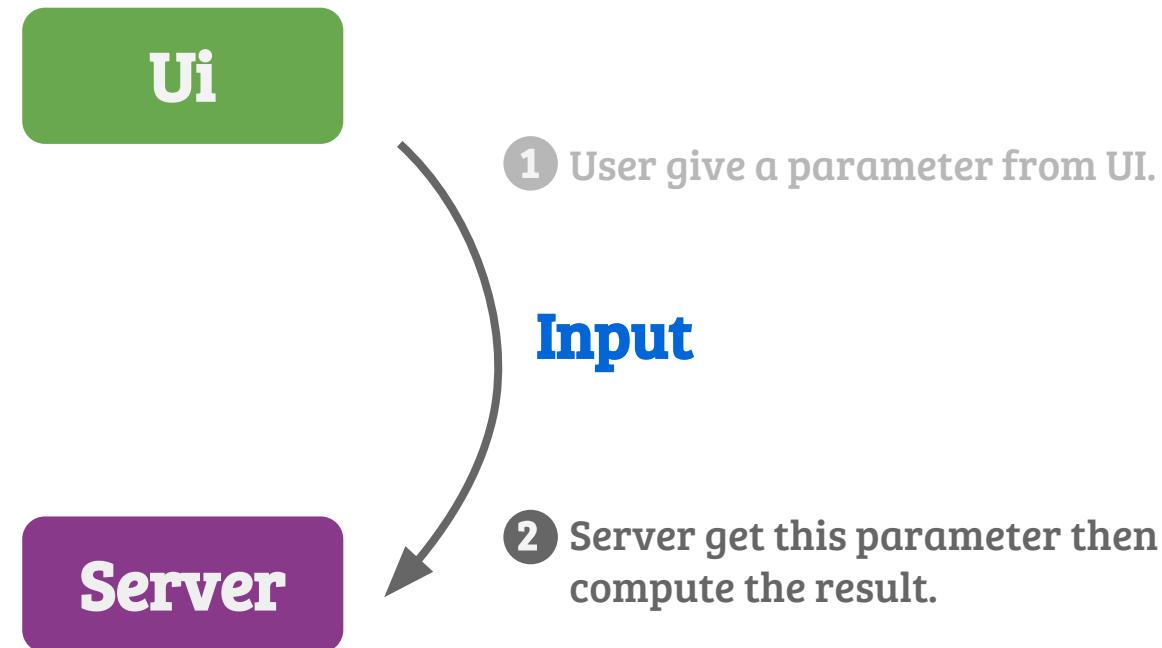
✓ **Server**

- Backend or engine of the application
- It's where the data is processed
- Control what your app does

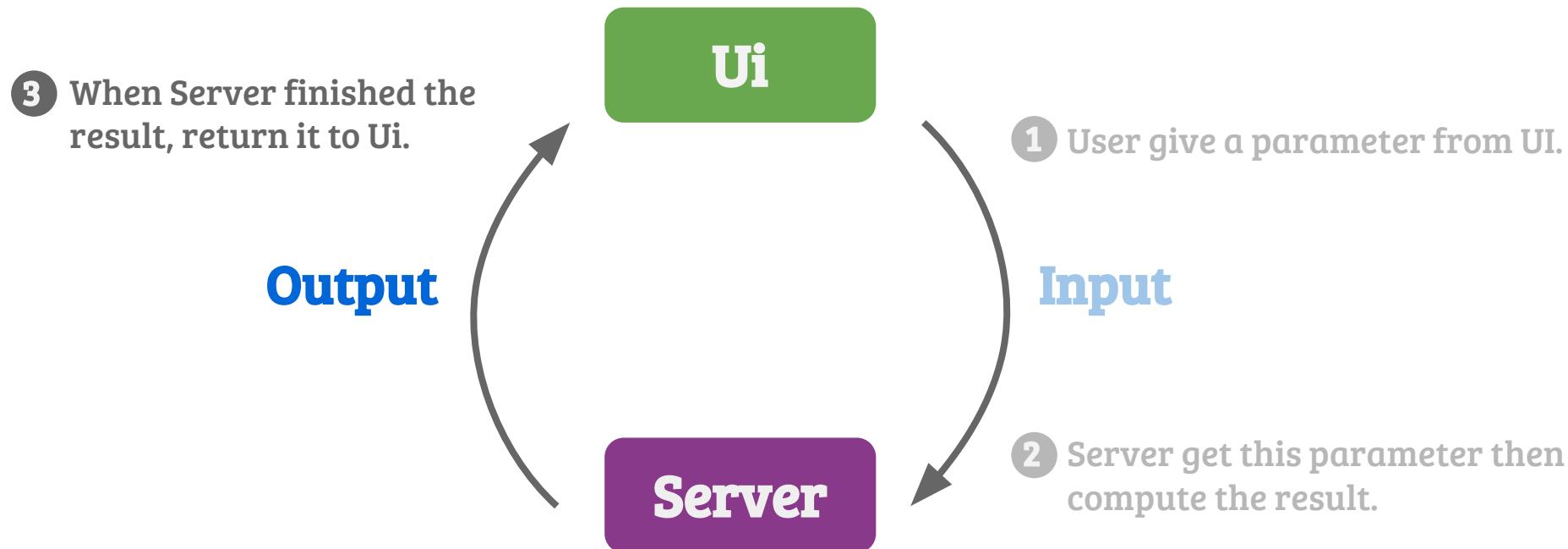
How does Shiny work



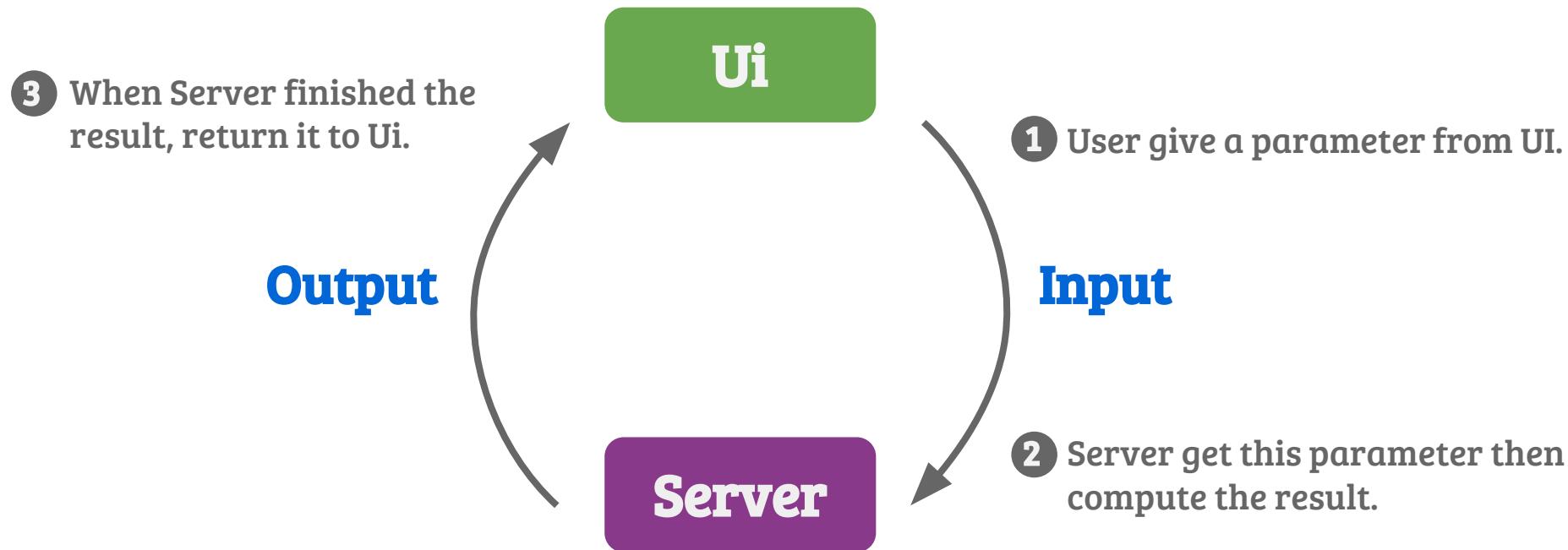
How does Shiny work



How does Shiny work



How does Shiny work

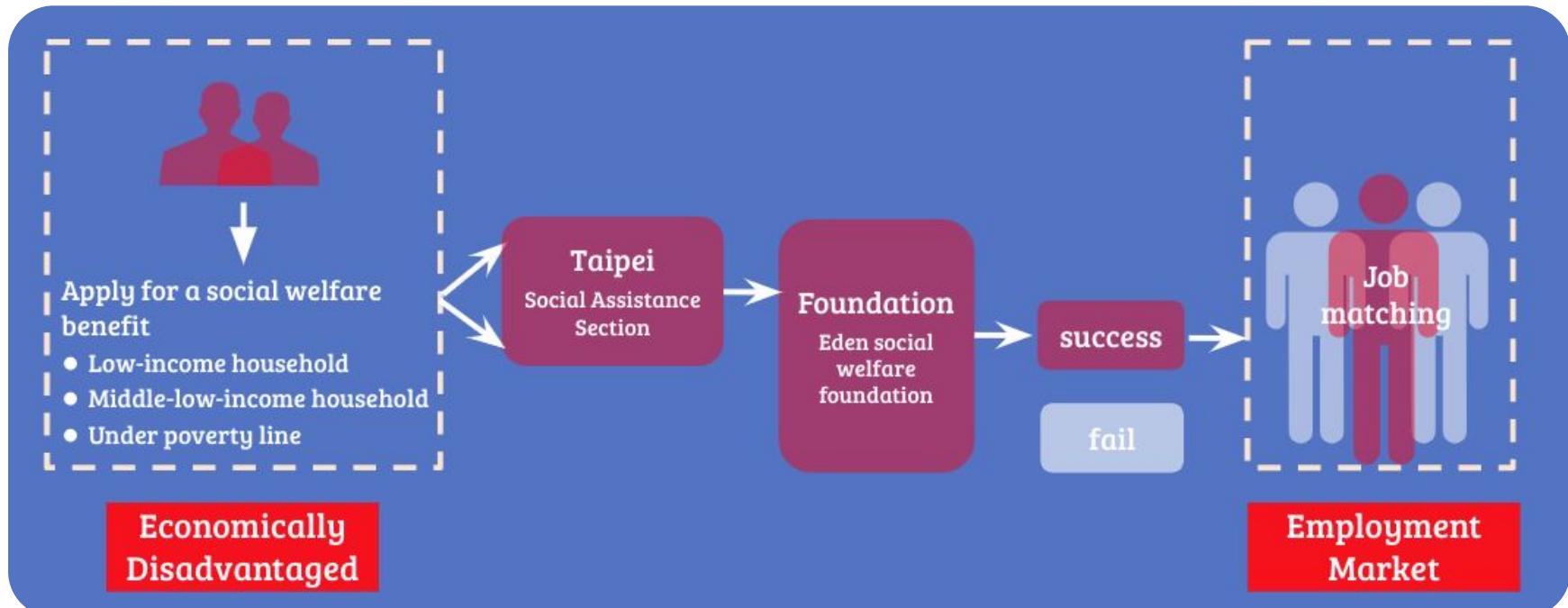


Case Sharing :

Deploy Recommended system via Shiny

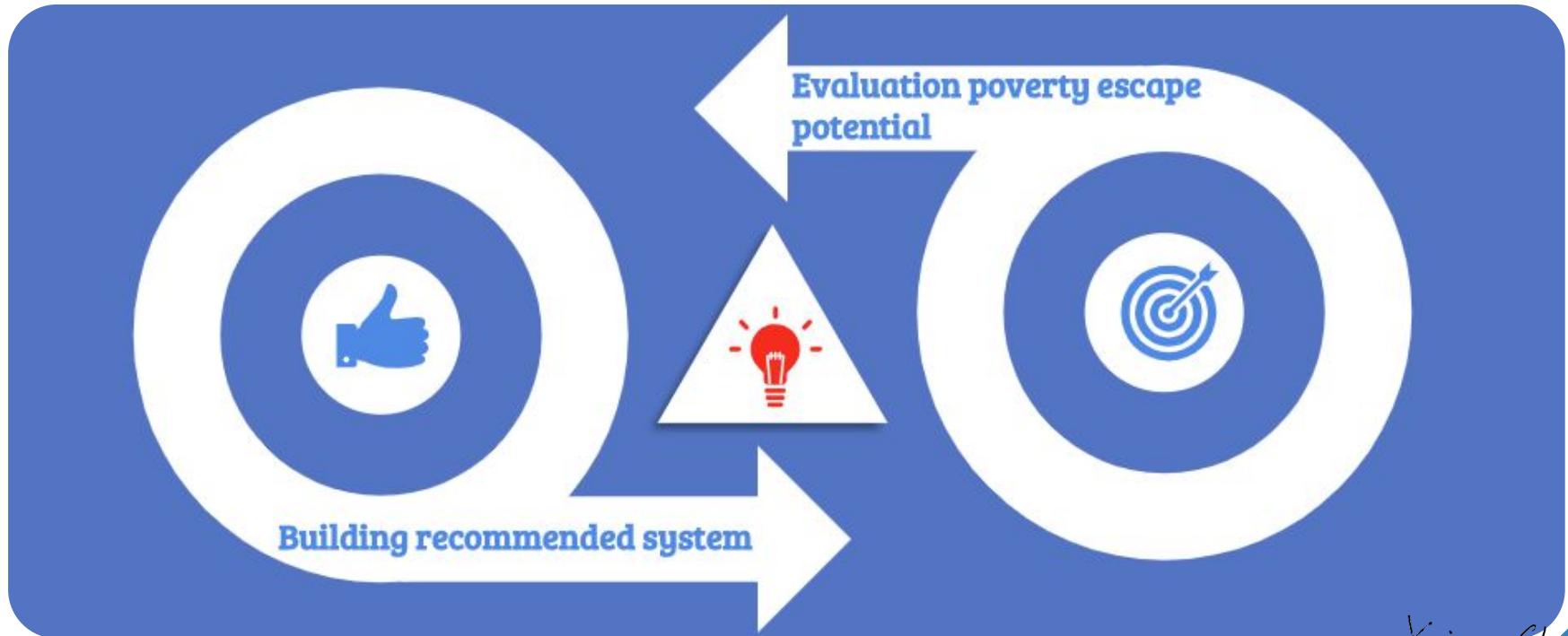
Project introduction -- poverty escape

- Helping economically disadvantaged people go back to work.



Project introduction -- poverty escape

- Precision recommender system

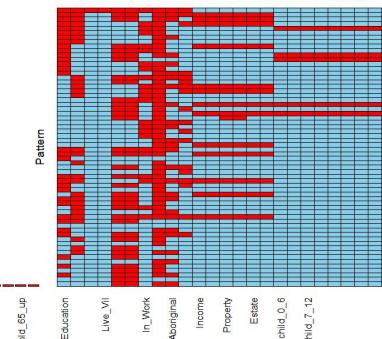
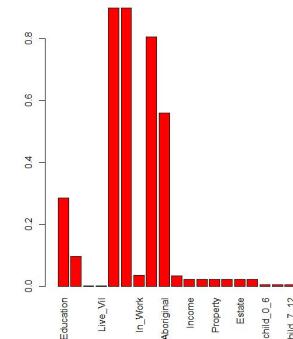


Project introduction -- poverty escape

Step 1. Training Model

[Data ETL]

- Data Cleaning
- Missing Value
- One-Hot Encoding



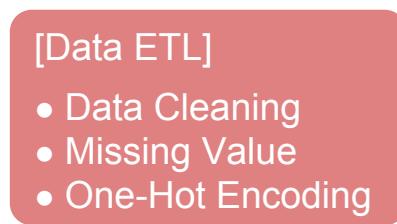
ID	Education Level
4521	Literacy
9527	
3328	
6684	Elementary
1016	Elementary
1016	Literacy



ID	Education Level	Education Level_Missing	Education Level_Literacy	Education Level_Elementary
4521	Literacy	0	1	0
9527		1	0	0
3328		1	0	0
6684	Elementary	0	0	1
1016	Elementary	0	0	1
1016	Literacy	0	1	0

Project introduction -- poverty escape

Step 1. Training Model



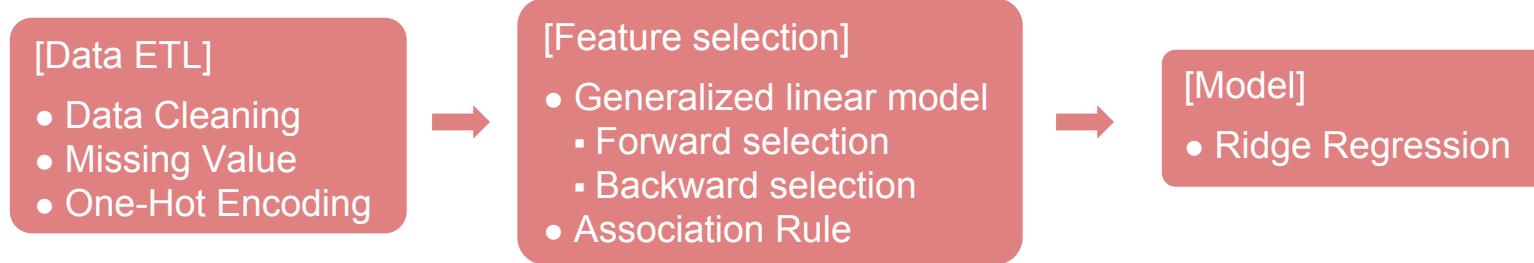
[Feature selection]

- Generalized linear model
 - Forward selection
 - Backward selection
- Association Rule



Project introduction -- poverty escape

Step 1. Training Model



- Ridge Regression 的 Loss Function

$$\hat{\beta}^{ridge} = \underset{\beta}{\operatorname{argmin}} \left\{ \sum_{i=1}^N (y_i - \beta_0 - \sum_{j=1}^p x_{ij}\beta_j)^2 + \lambda \sum_{j=1}^p \beta_j^2 \right\}$$

- (1) Solve Multicollinearity problems
- (2) Avoid overfitting

Project introduction -- poverty escape

Step 2. Shiny App



Upload the new
list to shiny



Get the recommend
result



Check the result
details

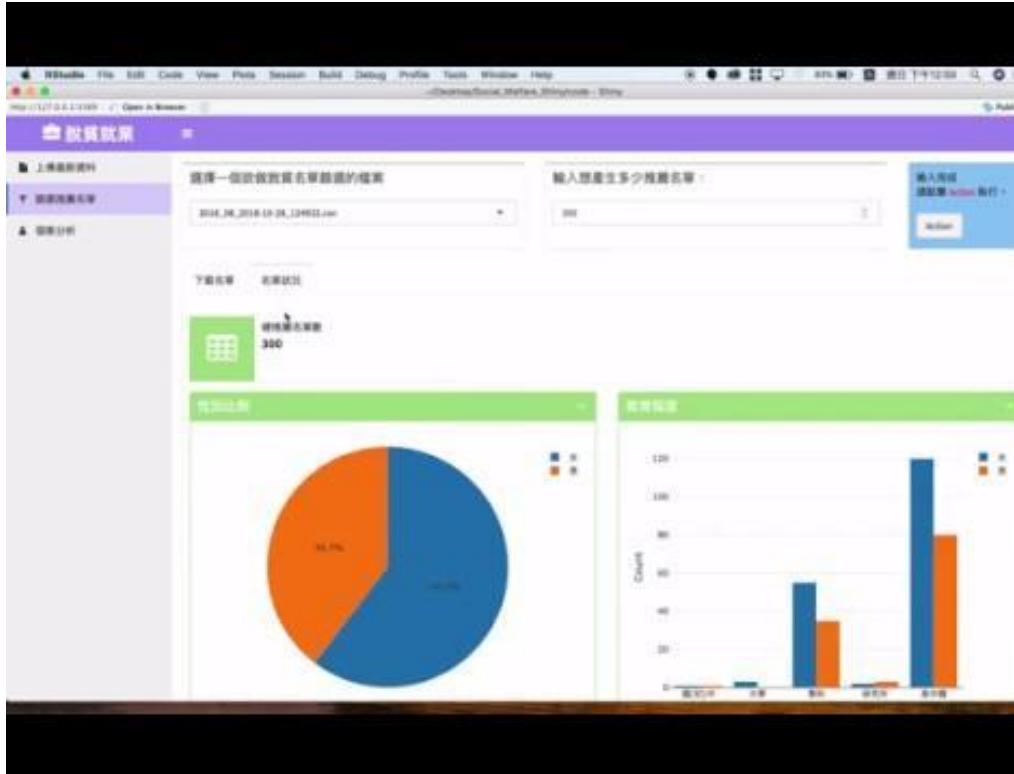


Download the
recommend result



How does it work?

Demo



Case Sharing :

Azure ML via Shiny

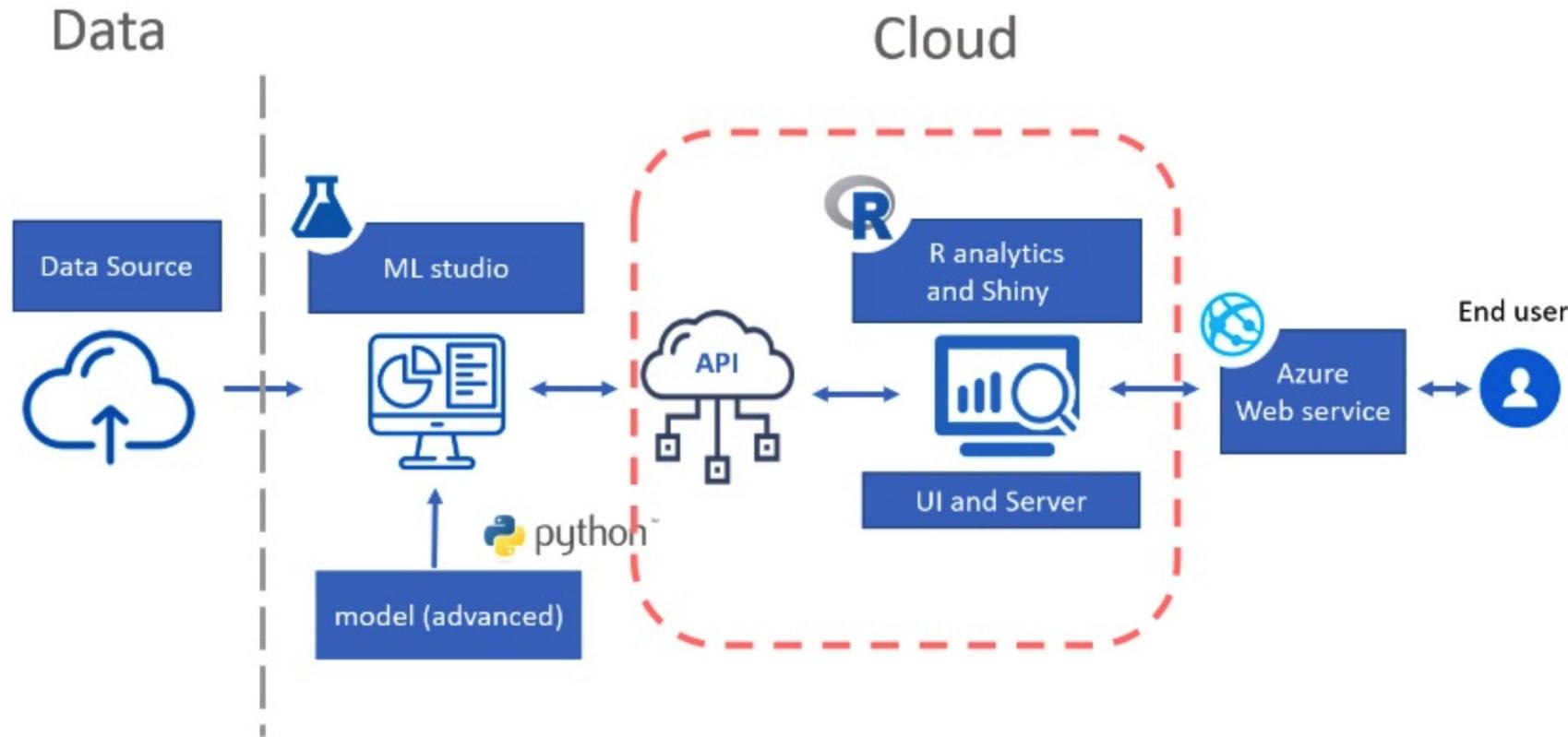
2018 Coding Angels



- 105 Female students



2018 Coding Angels



~/Desktop/Shiny/Shiny_Titanic - Shiny

http://127.0.0.1:3857 | Open in Browser | Publish

Titanic Survival Prediction

Passenger Class :

1

Gender :

female

Port Embarkation :

C

Age :

80

Sibling Spouse :

8

Parent Child :

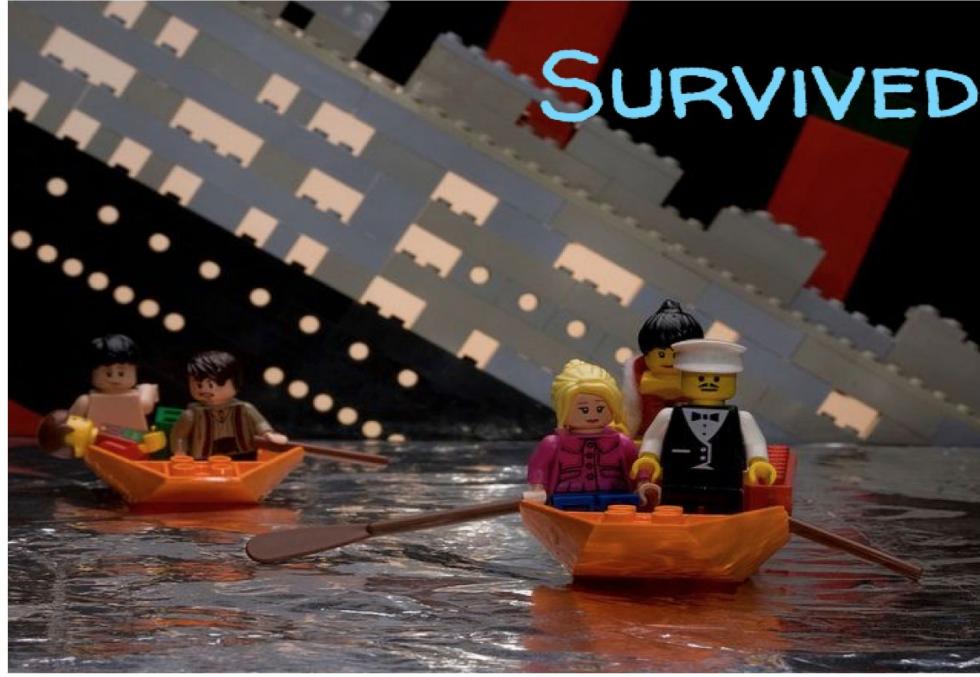
9

Fare Price :

0 512.3292

512.3292

0 51.23802.466 204.932 307.398 409.864 512.3292



On April 15, 1912, during her maiden voyage, the Titanic sank after colliding with an iceberg, killing 1502 out of 2224 passengers and crew.

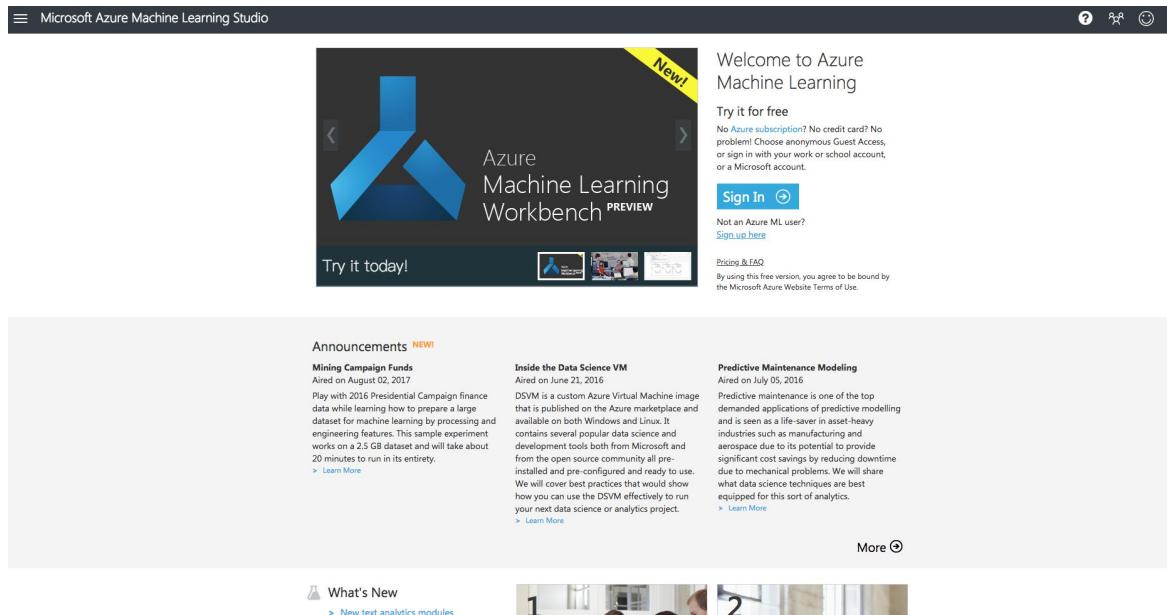
[Note] About Titanic Data

Variable	Definition	Key
survival	Survial	0=No , 1=Yes
pclass	Ticket Class	1=1st , 2=2nd , 3=3rd
embarked	Port of embarkation	C = Cherbourg , Q = Queenstown , S = Southampton
age	Age in years	
sibsp	#of siblings / spouses aboard the Titanic	
parch	#of parents / children aboard the Titanic	
ticket	Ticket number	
fare	Passenger fare	
cabin	Cabin number	
sex	Sex	



What is Azure Machine Learning Studio ?

Note <https://studio.azureml.net/>



The screenshot shows the Microsoft Azure Machine Learning Studio homepage. At the top, there's a navigation bar with a menu icon, the text "Microsoft Azure Machine Learning Studio", and icons for help, user profile, and sign in. Below the navigation is a large "Welcome to Azure Machine Learning" banner with a "New!" badge. It includes a "Try it for free" button, a "Sign In" button, and links for "Not an Azure ML user? Sign up here". There's also a "Pricing & FAQ" section with a note about accepting terms of use. The main content area features three announcements: "Mining Campaign Funds" (aired on August 02, 2016), "Inside the Data Science VM" (aired on June 21, 2016), and "Predictive Maintenance Modeling" (aired on July 05, 2016). Each announcement has a "Learn More" link. At the bottom, there's a "What's New" section with a link to "New text analytics modules" and a thumbnail showing two people working on a computer.

- Collaborative
- Drag-and-drop tool
- [easy] Build ML models
- [easy] Deploy ML models

How to connect with Shiny -- Setup Web Service

Microsoft Azure Machine Learning Studio

Experiment created on 2018/11/30

In draft

Draft saved at 下午6:35:31

Properties Project

Experiment Properties

- START TIME 11/30/2018...
- END TIME 11/30/2018...
- STATUS CODE InDraft
- STATUS DETAILS None

Prior Run

Summary

Description

Quick Help

Import Data → Select Columns in Dataset → Clean Missing Data → Split Data → Two-Class Logistic Regression → Train Model → Score Model → Select Columns in Dataset → Web service output

Web service input

1

Input Output

NEW

RUN HISTORY SAVE SAVE AS DISCARD CHANGES SET UP WEB SERVICE PUBLISH TO GALLERY

```
graph TD; Import[Import Data] --> Select1[Select Columns in Dataset]; Select1 --> Clean[Clean Missing Data]; Clean --> Split[Split Data]; Split --> Logistic[Two-Class Logistic Regression]; Logistic --> Train[Train Model]; Train --> Score[Score Model]; Score --> Select2[Select Columns in Dataset]; Select2 --> Output[Web service output]; Input[Web service input] --> Select2;
```

How to connect with Shiny – Deploy Web Service

Microsoft Azure Machine Learning Studio

Experiment created on 2018/11/30

Finished running ✓

Properties Project

Experiment Properties

- START TIME 11/30/2018...
- END TIME 11/30/2018...
- STATUS CODE Finished
- STATUS DETAILS None

Prior Run

Summary

Description

Quick Help

Search experiment items

Import Data

Select Columns in Dataset

Clean Missing Data

Two-Class Logistic Regression

Split Data

Train Model

Select Columns in Dataset

Web service input

Score Model

Select Columns in Dataset

Output

2

Input

Output

+

1:1

SET UP WEB SERVICE

PUBLISH TO GALLERY

NEW

RUN HISTORY

SAVE

SAVE AS

DISCARD CHANGES

RUN

Kristen Chan 27

```
graph TD; Import[Import Data] --> Select1[Select Columns in Dataset]; Select1 --> Clean[Clean Missing Data]; Clean --> Split[Split Data]; Split --> Train[Train Model]; Train --> Select2[Select Columns in Dataset]; Select2 --> WebInput[Web service input]; WebInput --> Score[Score Model]; Score --> Select3[Select Columns in Dataset]; Select3 --> Output[Output];
```

Azure ML Studio Web Services

≡ Microsoft Azure Machine Learning Web Services

Quickstart

Dashboard

Batch Request Log

Configure

Consume

Test

Swagger API

Sample Code

Request–Response

1

Select R Code

C# Python Python 3+

R

2

Copy



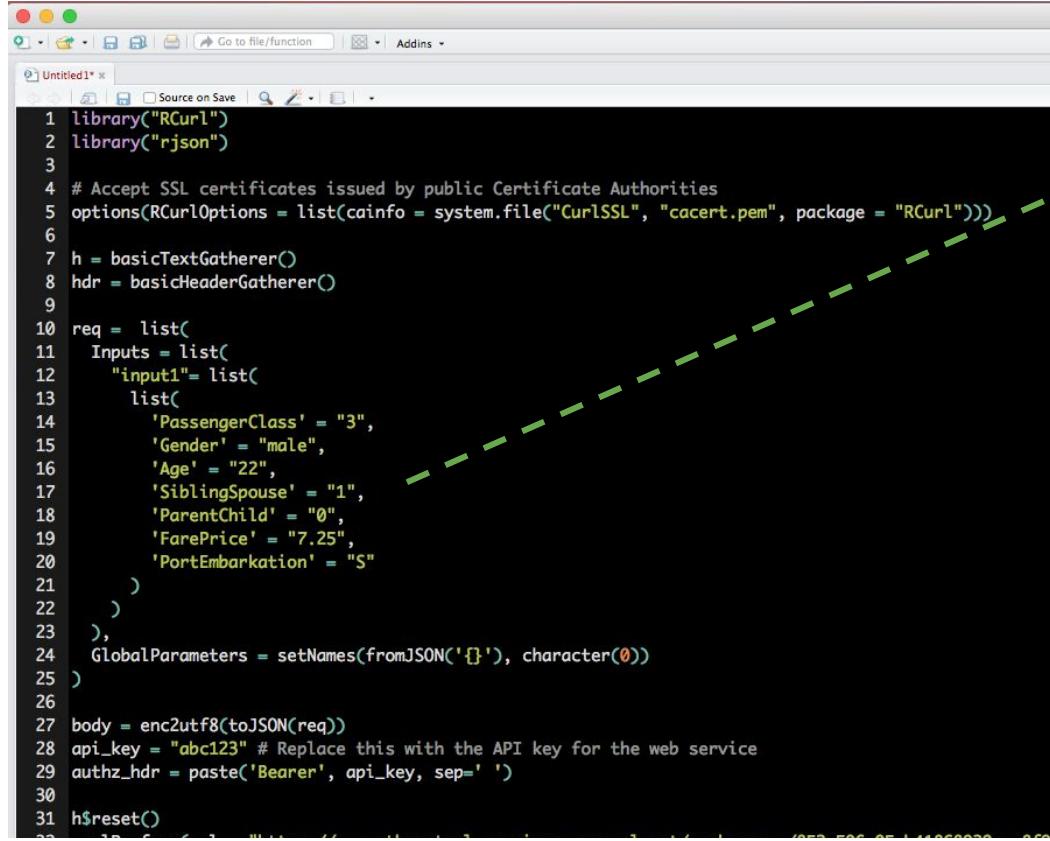
```
library("RCurl")
library("rjson")

# Accept SSL certificates issued by public Certificate Authorities
options(RCurlOptions = list(cainfo = system.file("CurlSSL", "cacert.pem", package = "RCurl")))

h = basicTextGatherer()
hdr = basicHeaderGatherer()

req = list(
  Inputs = list(
    "input1" = list(
      list(
        'PassengerClass' = "3",
        'Gender' = "male",
        'Age' = "22",
        'SiblingSpouse' = "1",
        'ParentChild' = "0",
        'FarePrice' = "7.25",
        'PortEmbarkation' = "S"
      )
    )
  )
)
```

Azure ML API in R



The screenshot shows an RStudio interface with an 'Untitled1' script open. The code is written in R and demonstrates how to make a POST request to an Azure ML web service using the RCurl and rjson packages. A green dashed arrow points from the input parameters in the code to the corresponding JSON object in the code block below.

```
1 library("RCurl")
2 library("rjson")
3
4 # Accept SSL certificates issued by public Certificate Authorities
5 options(RCurlOptions = list(cainfo = system.file("CurlSSL", "cacert.pem", package = "RCurl")))
6
7 h = basicTextGatherer()
8 hdr = basicHeaderGatherer()
9
10 req = list(
11   Inputs = list(
12     "input1" = list(
13       list(
14         'PassengerClass' = "3",
15         'Gender' = "male",
16         'Age' = "22",
17         'SiblingSpouse' = "1",
18         'ParentChild' = "0",
19         'FarePrice' = "7.25",
20         'PortEmbarkation' = "S"
21       )
22     ),
23   ),
24   GlobalParameters = setNames(fromJSON('[]'), character(0))
25 )
26
27 body = enc2utf8(toJSON(req))
28 api_key = "abc123" # Replace this with the API key for the web service
29 authz_hdr = paste('Bearer', api_key, sep=' ')
30
31 h$reset()
```

"PassengerClass" = "3",
"Gender" = "female",
"Age" = "22",
"SiblingSpouse" = "1",
"ParentChild" = "0",
"FarePrice" = "7.25",
"PortEmbarkation" = "S"

Azure ML API in R

The screenshot shows the RStudio interface with a Shiny application code editor on the left and a file browser on the right.

Code Editor (Left):

```
22 }
23 },
24 GlobalParameters = setNames(fromJSON(``), character(0))
25 )
26
27 body = enc2utf8 toJSON(req)
28 api_key = "/D04m7PMUw+mhrKLhXnLl9tBQinTmqB8jwfjKoUMiq9FRglwau6rHqgMgov9j+hL/vBFYXcJnQNQGcCr9zPw=="
29 authz_hdr = paste0("Bearer ", api_key, sep=" ")
30
31 h$reset()
32 curlPerform(url = "https://usouthcentral.services.azureml.net/workspaces/852a506a05ab41868939caa8f97d3a57/services/c052c781636540b4a15",
33 httpheader=c("Content-Type" = "application/json", "Authorization" = authz_hdr),
34 postfields=body,
35 writefunction = h$update,
36 headerfunction = hdr$update,
37 verbose = TRUE
38 )
39
40 headers = hdr$value()
41 httpStatus = headers["status"]
42 if (httpStatus >= 400)
43 {
44 print(paste("The request failed with status code:", httpStatus, sep=" "))
45
46 # Print the headers - they include the request ID and the timestamp, which are useful for debugging the failure
47 print(headers)
48 }
49
50 print("Result:")
51 result = h$value()
52 print(fromJSON(result))
```

A blue button labeled "Run all" is positioned in the center of the code editor area.

File Browser (Right):

The file browser shows a directory structure under "Home". A blue arrow points from the text "Check the result format:" to the "Results" folder.

Text Overlay:

Check the result format:
\$Results\$output2[[1]]\$PredictedSurvived

Check the result formats

\$Results\$output2[[1]]\$PredictedSurvived

[Layout] Titanic Survival Prediction

~/Desktop/Shiny/Shiny_Titanic - Shiny

http://127.0.0.1:3857 | Open in Browser | Publish

Titanic Survival Prediction

Passenger Class :

Gender :

Port Embarkation :

Age :

Sibling Spouse :

Parent Child :

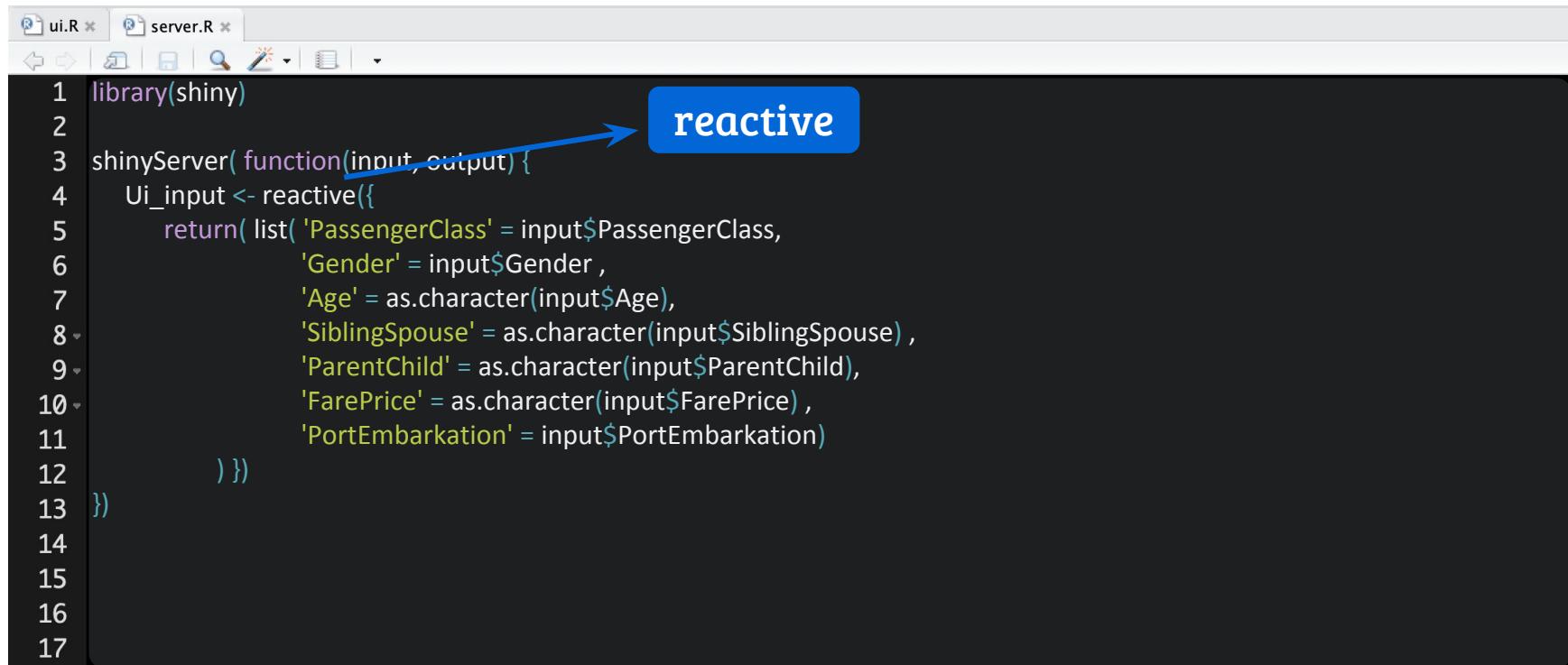
Fare Price :

The image shows a Shiny application interface for a Titanic survival prediction. The left side features a sidebar with dropdown menus and input fields for various passenger attributes: Passenger Class (1), Gender (female), Port Embarkation (C), Age (80), Sibling Spouse (8), Parent Child (9), and Fare Price (0 to 512.3292). The right side displays a photograph of LEGO minifigures in lifeboats on water, with the word "SURVIVED" written in blue capital letters on a dark background.

[Code] Titanic Survival Prediction -- input

```
ui.R * server.R *
Run App
1 library(shiny)
2
3 shinyUI(fluidPage(
4   titlePanel("Titanic Survival Prediction"),
5   sidebarLayout(
6     sidebarPanel(
7       selectInput( inputId="PassengerClass",label="Passenger Class : ", choices=c(1,2,3)),
8       selectInput( inputId="Gender", label="Gender : ", choices=c("female","male")),
9       selectInput( inputId="PortEmbarkation", label="Port Embarkation : ", choices=c("C","Q","S")),
10      numericInput( inputId="Age", label="Age : ", min=0, max=80, value=80, step=0.5),
11      numericInput( inputId="SiblingSpouse", label="Sibling Spouse : ",min=0, max=8, value=8, step=1),
12      numericInput( inputId="ParentChild", label="Parent Child : ", min=0, max=9, value=9, step=1),
13      sliderInput( inputId="FarePrice", label="Fare Price : ", min=0, max=512.35, value=512.35, step=0.0001, sep=""))
14    ),
15    mainPanel()
16  )
17 ))
```

[Code] Titanic Survival Prediction -- Access Input Value



```
1 library(shiny)
2
3 shinyServer( function(input, output) {
4   Ui_input <- reactive({
5     return( list('PassengerClass' = input$PassengerClass,
6                 'Gender' = input$Gender ,
7                 'Age' = as.character(input$Age),
8                 'SiblingSpouse' = as.character(input$SiblingSpouse) ,
9                 'ParentChild' = as.character(input$ParentChild),
10                'FarePrice' = as.character(input$FarePrice) ,
11                'PortEmbarkation' = input$PortEmbarkation)
12   ) })
13 }
14
15
16
17 }
```

Get AzureML Result & Setting Output Plot

```
51         postfields=body,
52         writefunction = h$update,
53         headerfunction = hdr$update,
54         verbose = TRUE
55     )
56
57     #---- Get Result ----
58     result = fromJSON( h$value() )$Results$output2[[1]]$PredictedSurvived
59
60     if ( result == "1" ) {
61         return( list(
62             src = "www/survived.png",
63             height = 480, width = 700,
64             alt = "Survived"
65         ))
66     } else if ( result == "0" ) {
67         return( list(
68             src = "www/deceased.png",
69             height = 480, width = 700,
70             alt = "Deceased"
71         ))
72     }
73 }, deleteFile = FALSE)
74 }
```

← AzureML Result

```
if ( result == "1" ) {
    Survived Plot
} else if ( result == "0" ) {
    Deceased Plot
}
```

~/Desktop/Shiny/Shiny_Titanic - Shiny

http://127.0.0.1:3857 | [Open in Browser](#) |

Titanic Survival Prediction

Passenger Class :

1

Gender :

female

Port Embarkation :

C

Age :

80

Sibling Spouse :

8

Parent Child :

9

Fare Price :

0 512.3292

512.3292

0 51.23802.466 204.932 307.398 409.864 512.3292

Kristen Chan 35

Case Sharing :

R-Ladies Taipei

Kaggle Leaderbord via Shiny

2018 R-Ladies Taipei -- Kaggle competition



- 50 Females
- 24 hours hackathon

What is Kaggle ?

- Website : <https://www.kaggle.com>
- A platform to compete with others in competitions which are based on machine learning tasks.
- It passed 1,000,000 registered users.
- The community spans 194 countries.



What is Kaggle ?

We use cookies on kaggle to deliver our services, analyze web traffic, and improve your experience on the site. By using kaggle, you agree to our use of cookies.

[Got it](#) [Learn more](#)

kaggle Search Competitions Datasets Kernels Discussion Learn ... Sign In

Competitions

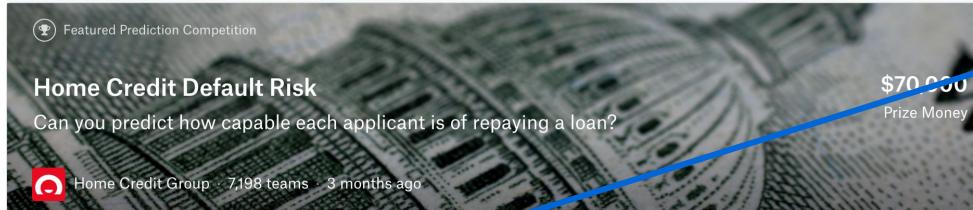
[Documentation](#) [InClass](#)

General InClass Sort by Grouped All Categories

16 Active Competitions

TWO SIGMA	Two Sigma: Using News to Predict Stock Movements Use news analytics to predict stock price performance <small>Featured · a month to go · 📰 news agencies, time series, finance, money</small>	\$100,000 2,061 teams
	NFL Punt Analytics Competition Analyze NFL game data and suggest rules to improve player safety during punt plays <small>Analytics · a month to go · 🏈 health, american football, sports, safety</small>	\$80,000 0 teams
	Elo Merchant Category Recommendation Help understand customer loyalty <small>Featured · 3 months to go · 🏦 banking, tabular data, regression</small>	\$50,000 768 teams
	Google Analytics Customer Revenue Prediction Predict how much GStore customers will spend <small>Featured · 2 months to go · 📊 regression, tabular data</small>	\$45,000 1,104 teams

What is Kaggle ?



Leaderboard

#	△pub	Team Name	Kernel	Team Members	Score ⓘ	Entries	Last
1	▲ 10	Home Aloan			0.80570	499	3mo
2	—	ikiri_DS			0.80561	477	3mo
3	▲ 1	alijs & Evgeny			0.80511	143	3mo
4	▲ 6	Quad Machine			0.80474	178	3mo
5	▼ 4	Kraków, Lublin i Zhabinka			0.80449	329	3mo
6	▲ 8	silver			0.80419	414	3mo

How does shiny help us?

The screenshot shows a Shiny application interface. At the top, there's a header bar with a back button, a title field containing "http://127.0.0.1:4636" and "Open in Browser", and a "Publish" dropdown. Below the header is a navigation menu with links: "R-Ladies Taipei x Kaggle", "About", "Ranking", "Another No1.", "Attendees", and "More".

The main content area features a purple banner with the text "library(dplyr)" and R code: "r-ladies_taipei %>% filter(topic = '2018 R-Ladies Taipei Kaggle')". To the right of the code is the R-Ladies Taipei logo, which is a purple circle with a white "R" and a small tower icon above it.

Below the banner is a large graphic featuring the R logo (purple "R" inside a white circle) and the word "kaggle" in blue. The text "2018 R-Ladies Taipei Kaggle 大賽" is displayed prominently. Below this, event details are listed: "時間: 08/11 11:00 - 08/12 14:30" and "地點: 台北市中正區市民大道三段2號 11F".

At the bottom, there are logos for sponsors: "R-Ladies Taipei" (purple circle with "R"), "STAR ROCKET" (blue and yellow geometric logo), "國泰慈善基金會 Cathay Charity Foundation" (green tree logo), and "In Bloom 印花樂" (yellow logo).

Small text at the bottom left includes "#參加kaggle松，保證肉變鬆" and "#臺灣第一個全女性Kaggle黑客松". A link "R-Ladies Taipei Community" is also present.

How does shiny help us?

The screenshot displays a Shiny application window titled "Manage Participant Information". The main content area shows a table of participant data with columns: TeamType, TeamNumber, TeamName, and TeamRole. The data is as follows:

	TeamType	TeamNumber	TeamName	TeamRole
1	Assistant	999	Pei Lee	Leader
2	Team	1	hahahahahah	Leader
3	Team	2	Ying-Yi Chen	Leader
4	Team	2	Janet	Member
5	Team	2	Rene Wang	Member
6	Team	3	Junjun	Leader
7	Team	3	Nina	Member
8	Team	3	Zen Hsiao	Member
9	Team	3	January	Member
10	Team	5	PepperChang	Leader

Below the table, a message indicates "Showing 1 to 10 of 38 entries" and includes navigation buttons for Previous, Next, and page numbers 1, 2, 3, 4.

The left sidebar contains form fields for "Submit a New Team" with the following labels and inputs:

- Team Type:**
 Assistant
 Team
 Personal
- Team Number:**
- Team Name:**
- Team Role:**
 Member
 Leader
- Password:**
- Submit** button

How does shiny help us?

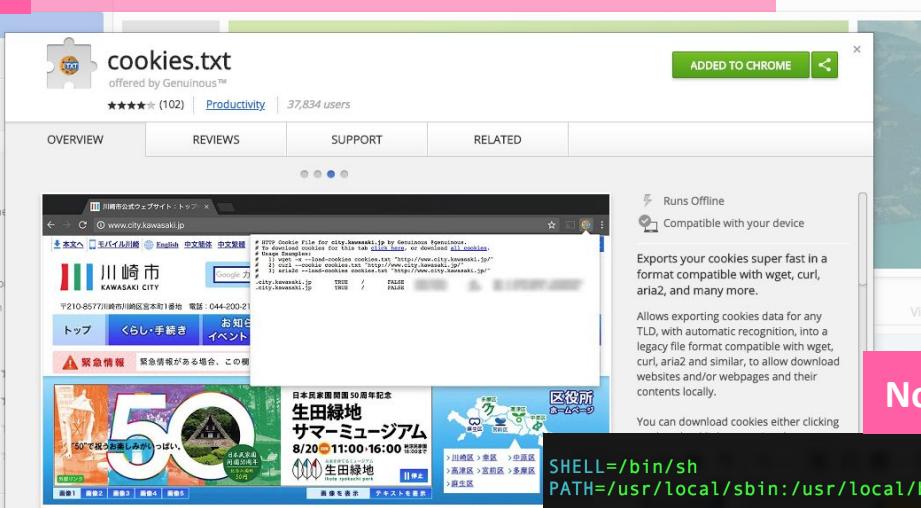
The screenshot shows a web browser displaying a Shiny application at <http://127.0.0.1:4636>. The title bar says "~/Desktop/staff - Shiny". The page header includes "R-Ladies Taipei x Kaggle", "About", "Ranking" (which is selected), "Another No1.", "Attendees", and "More". A blue callout box on the right says "Getting instant information". The main content is titled "最新戰況" (Latest Status) and shows an update time of "2018-12-05 02:00:59". It displays a table of 10 entries from a Kaggle competition, with columns for TeamType, TeamName, TeamRole, SubmissionDate, and Score. The table is paginated at the bottom, showing "Showing 1 to 10 of 16 entries" and buttons for "Previous", "1", "2", and "Next".

TeamType	TeamName	TeamRole	SubmissionDate	Score
1 Team	Celine	Leader	2018-08-12 04:14:16	0.795
2 Assistant	Pei Lee	Leader	2018-07-07 07:18:53	0.795
3 Team	PepperChang	Leader	2018-08-12 04:56:53	0.789
4 Team	YoungmiHuang	Leader	2018-08-12 04:58:43	0.78
5 Team	hahahahahahah	Leader	2018-08-11 15:41:59	0.778
6 Team	Tricia Tsai	Leader	2018-08-12 04:58:02	0.771
7 Team	Daisy Chou	Leader	2018-08-12 04:33:24	0.766
8 Team	Shirley Chou	Leader	2018-08-12 02:01:38	0.74
9 Team	A.Y. Chang	Leader	2018-08-12 01:53:30	0.723
10 Team	Ching Tseng	Leader	2018-08-12 02:14:07	0.713

Getting instant information

How does shiny help us?

Note Using Chrome Extensions : cookies.txt



store

Extensions

Themes

CATEGORIES

All

FEATURES

- Runs Offline
- By Google
- Free
- Available for
- Works with

RATINGS

Privacy Policy

RELATED

EdithThisCookie

Cookie Inspector

Pic Grabber

★★★★★ (102) Productivity 37,834 users

OVERVIEW

REVIEWS

SUPPORT

RELATED

www.city.kawasaki.jp

川崎市 KAWASAKI CITY

50周年記念 生田緑地 サマーミュージアム

8/20(日)11:00~16:00

区役所

毎日の暮らしに関する情報

川崎市からのお知らせ・告知

サンキューカールかわさき

★★★★★ (60829) FREE

★★★★★ (18296) FREE

sinue625@gmail.com

ADDED TO CHROME

Runs Offline

Compatible with your device

Exports your cookies super fast in a format compatible with wget, curl, aria2, and many more.

Allows exporting cookies data for any TLD, with automatic recognition, into a legacy file format compatible with wget, curl, aria2 and similar, to allow download websites and/or webpages and their contents locally.

You can download cookies either clicking

Automatic downloading

Note Setting Schedule (Azure VM -- Ubuntu)

```
SHELL=/bin/sh
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin

# m h dom mon dow user  command
17 *      * *   root    cd / && run-parts --report /etc/cron.hourly
25 6      * * *  root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
47 6      * * 7   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )
52 6      1 * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )
00 0-23  * * *   root    bash /srv/shiny-server/2018_Kaggle_Rank/kaggle.sh
#
```

Krisjen Chan 44

Thanks !!

Q & A

