



# 個人學術分享

## 研究分享與計畫撰寫

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國立臺中科技大學資訊工程系

專案助理教授

# 個人簡介

- National Cheng Kung University (2017/1-PhD)
  - Department of Engineering Science
  - Group of Computer Science and its Applications
- Research Fields
  - Natural Language Processing
    - Semantic Analysis (2009-Now)
    - Recommendation systems (2015-Now)
    - Chatbot (2019-Now)
  - Data Mining
    - Social Network Analysis (2013-2015)
    - Sentiment Analysis via Deep learning – CNN (2016-Now)
    - Air Quality Prediction (2018-Now)
- More on [jiaweichang.github.io/biography](https://jiaweichang.github.io/biography)

# 201808-NOW於臺中科大服務期間之發表

論文名稱	投稿期刊	期刊等級	狀態
Music Recommender using Deep Embedding-based Features and Behavior-based Reinforcement Learning	Multimedia Tools and Applications	SCIE, Impact Factor: 1.541 (Q2)	Under Review
A Study of Using Syntactic Cues in Short-text Similarity Measure	Journal of Internet Technology	SCIE, Impact Factor: 1.301 (Q3)	In Press
Design and Development of the Sentence-based Collocation Recommender with Error Detection for Academic Writing	Journal of Internet Technology	SCIE, Impact Factor: 1.301 (Q3)	Published
Email security level classification of imbalanced data using artificial neural network: The real case in a world-leading enterprise	Engineering Applications of Artificial Intelligence	SCIE, Impact Factor: 2.819 (Q1)	Published
The Effects of the Alternate Writing and Sketching Brainstorming Method on the Creativity of Industrial Design	Thinking Skills and Creativity	SSCI, Impact Factor: 1.333 (Q3)	Published

# EMAIL SECURITY LEVEL CLASSIFICATION

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Outline

Highlights

Abstract

Keywords

1. Introduction

2. Related work

3. Email security classification system

4. Experiments

5. Conclusions

Acknowledgments

References

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Figures (11)

Show all figures

Tables (23)

Engineering Applications of Artificial Intelligence

Volume 75, October 2018, Pages 11-21

ELSEVIER

Email security level classification of imbalanced data using artificial neural network: The real case in a world-leading enterprise

Jen-Wei Huang<sup>a,\*,</sup>, Chia-Wen Chiang<sup>b,</sup>, Jia-Wei Chang<sup>c</sup>

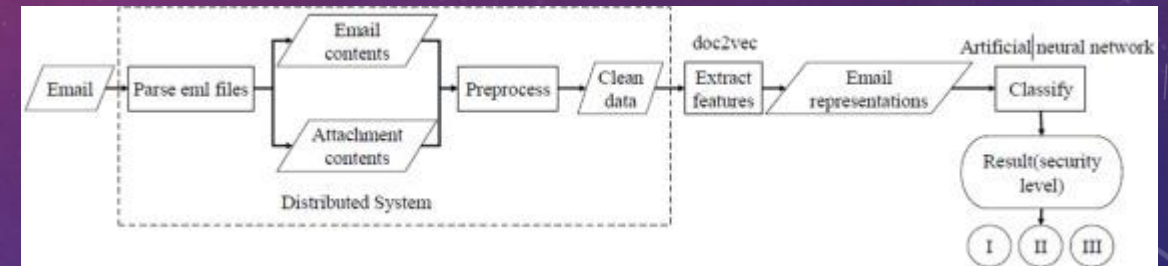
Show more

<https://doi.org/10.1016/j.engappai.2018.07.010>

Get rights and content

Highlights

- An effective and efficient model to classify the Email Security Level.
- Address the data imbalance problem which is common in a real-world application.
- The experimental dataset that collected from a world-leading enterprise.
- The experiments compared the well-known approaches of the semantic representation.
- The proposed system is now utilized in a world-leading enterprise.





# SEMANTIC-BASED RECOMMENDER FOR ONLINE BOOKSTORE

Outline

Highlights

Abstract

Keywords

1. Introduction

2. Backgrounds

3. Methodology

4. Performance test of the case retrieval agent

5. Case study

6. Conclusions

Acknowledgements

References

Vitae

Show full outline

Computers in Industry

Volume 78, May 2016, Pages 29–42

Integrating a semantic-based retrieval agent into case-based reasoning systems: A case study of an online bookstore

Jia Wei Chang<sup>a</sup>, Ming Che Lee<sup>b,\*,</sup>, Tzone I Wang<sup>a</sup>

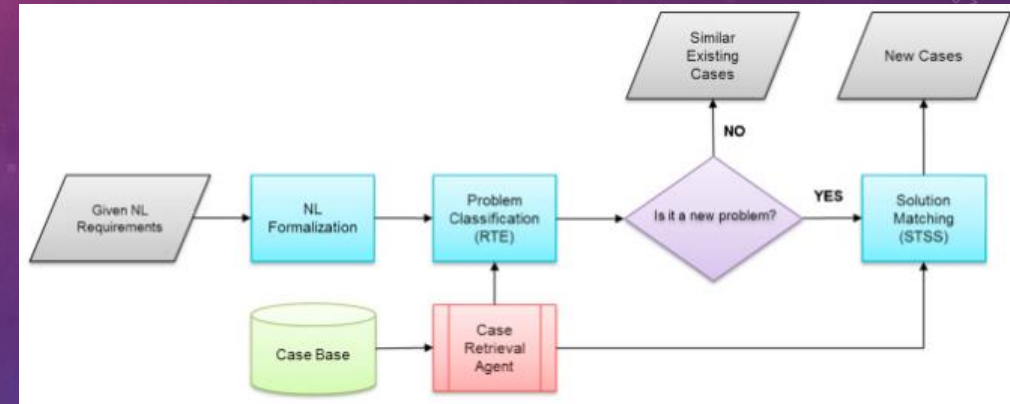
Show more

<https://doi.org/10.1016/j.compind.2015.10.007>

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Highlights

- This paper integrates techniques of natural language processing into a case retrieval agent.
- The use of semantic and syntactic information defines the meanings more accurately.
- Integrating semantic-based retrieval agent into the CBR system improves performance at initial state.
- The proposed CBR system with collaborative filtering constantly improves recommendation quality.
- The proposed CBR model outperforms the compared systems in the case study of an online bookstore.



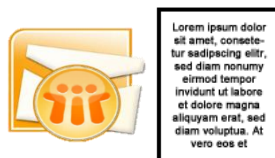


自然語言理解

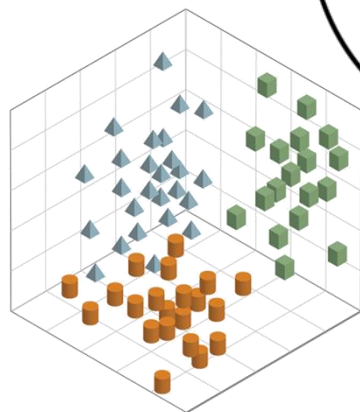
NATURAL LANGUAGE UNDERSTANDING

## 文字檔案

Input:  
one document



word  
vectors



## word2vec

將被拆解成多個字元

Model:



vector space

解析成多元維度的向量

透過向量比對  
找出相似的資料

most\_similar('france'):

spain	0.678515
belgium	0.665923
netherlands	0.652428
italy	0.633130

highest cosine  
distance values  
in vector space  
of the nearest  
words

# VECTOR REPRESENTATION

	$w_1$	$w_2$	$w_3$	..	..	..	$w_{n-1}$	$w_n$	label
$D_1$	0.11	0.23	0	..	..	..	0.57	0	0
$D_2$	0	0	0	..	..	..	0.29	0.7	1
$D_3$	0	0.81	0.44	..	..	..	0	0	0
$D_4$	0	0.37	0	..	..	..	0	0.16	1
..	..	..	..	..	..	..	..	..	..
$D_k$	..	..	..	..	..	..	..	..	1



# 潛藏語意分析

- 奇異值分解
  - Singular Value Decomposition (SVD)

Index Words	Titles								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
book			1	1					
dads						1			1
dummies		1						1	
estate							1		1
guide	1					1			
investing	1	1	1	1	1	1	1	1	1
market	1		1						
real							1		1
rich						2			1
stock	1		1					1	
value				1	1				

=

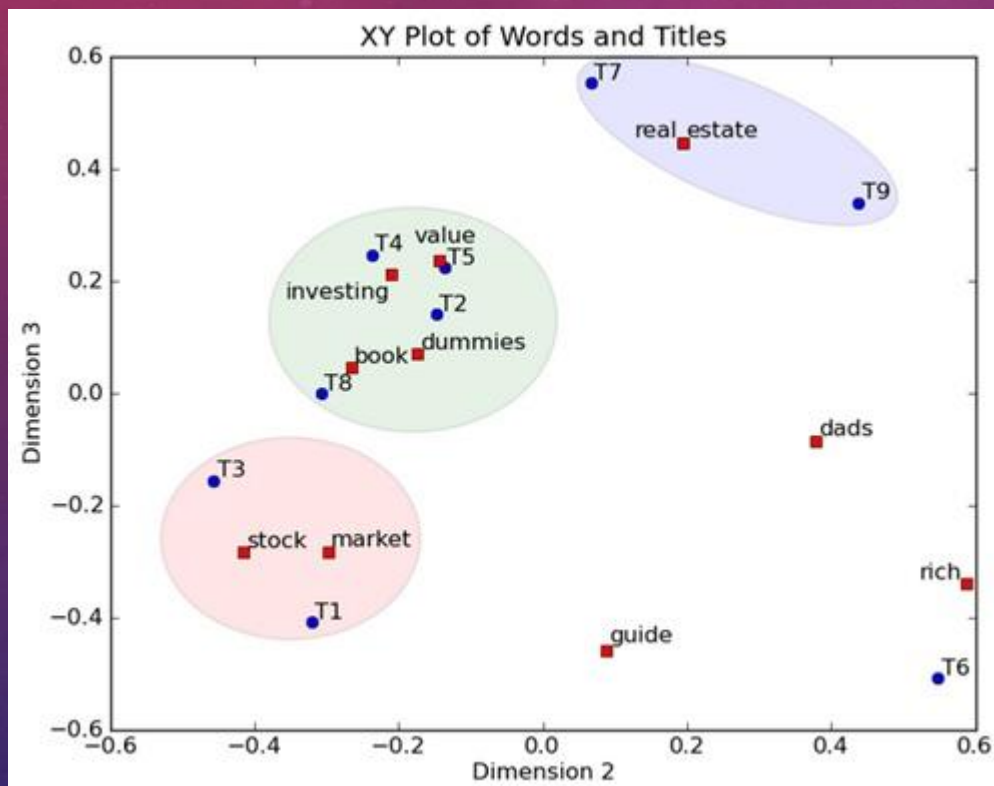
book	0.15	-0.27	0.04
dads	0.24	0.38	-0.09
dummies	0.13	-0.17	0.07
estate	0.18	0.19	0.45
guide	0.22	0.09	-0.46
investing	0.74	-0.21	0.21
market	0.18	-0.30	-0.28
real	0.18	0.19	0.45
rich	0.36	0.59	-0.34
stock	0.25	-0.42	-0.28
value	0.12	-0.14	0.23

3.91	0	0
0	2.61	0
0	0	2.00

T1	T2	T3	T4	T5	T6	T7	T8	T9
0.35	0.22	0.34	0.26	0.22	0.49	0.28	0.29	0.44
-0.32	-0.15	-0.46	-0.24	-0.14	0.55	0.07	-0.31	0.44
-0.41	0.14	-0.16	0.25	0.22	-0.51	0.55	0.00	0.34

# 潛藏語意分析

- 奇異值分解
  - Singular Value Decomposition (SVD)

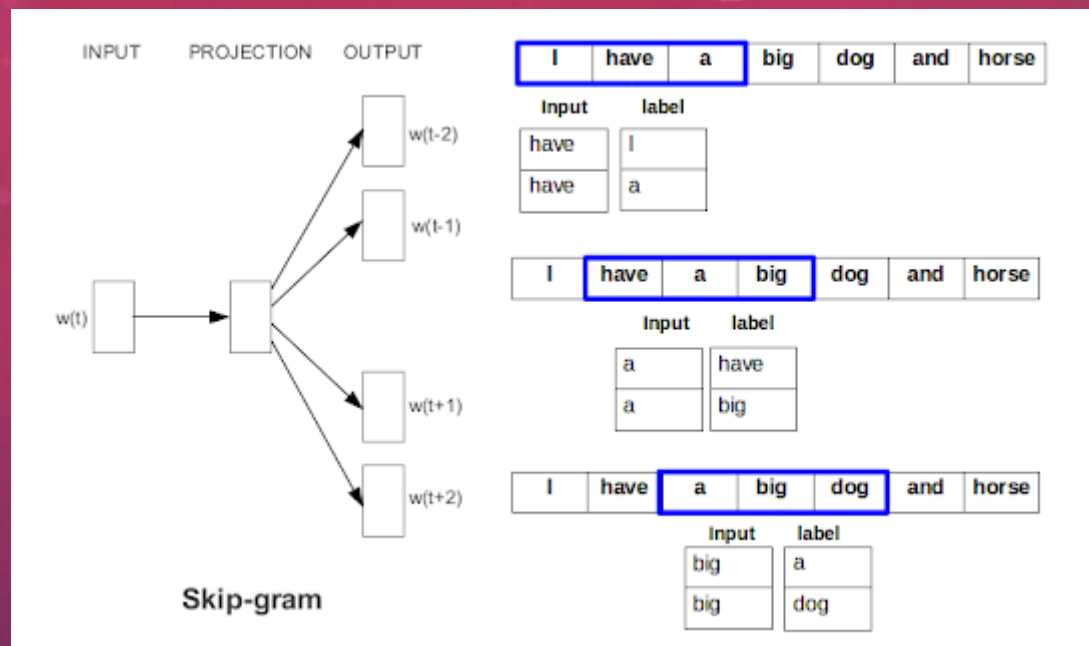


Index Words	Titles								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
book			1	1					
dads						1			1
dummies		1						1	
estate							1		1
guide	1					1			
investing	1	1	1	1	1	1	1	1	1
market	1		1						
real							1		1
rich						2			1
stock	1		1					1	
value				1	1				

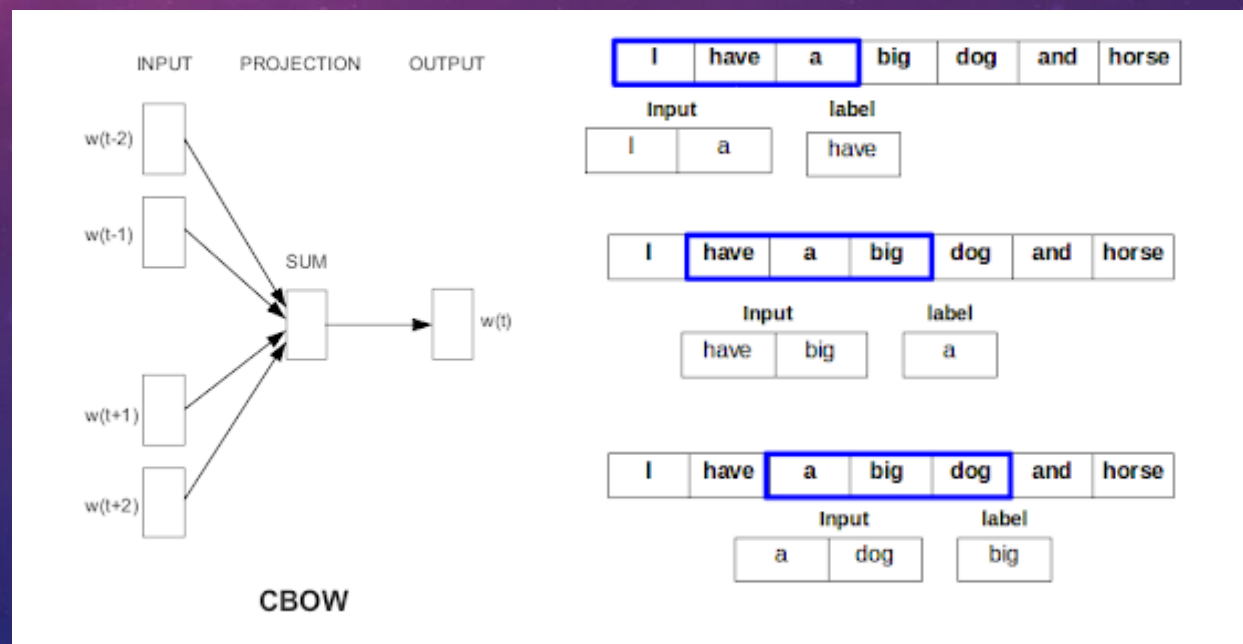


**WORD2VEC**

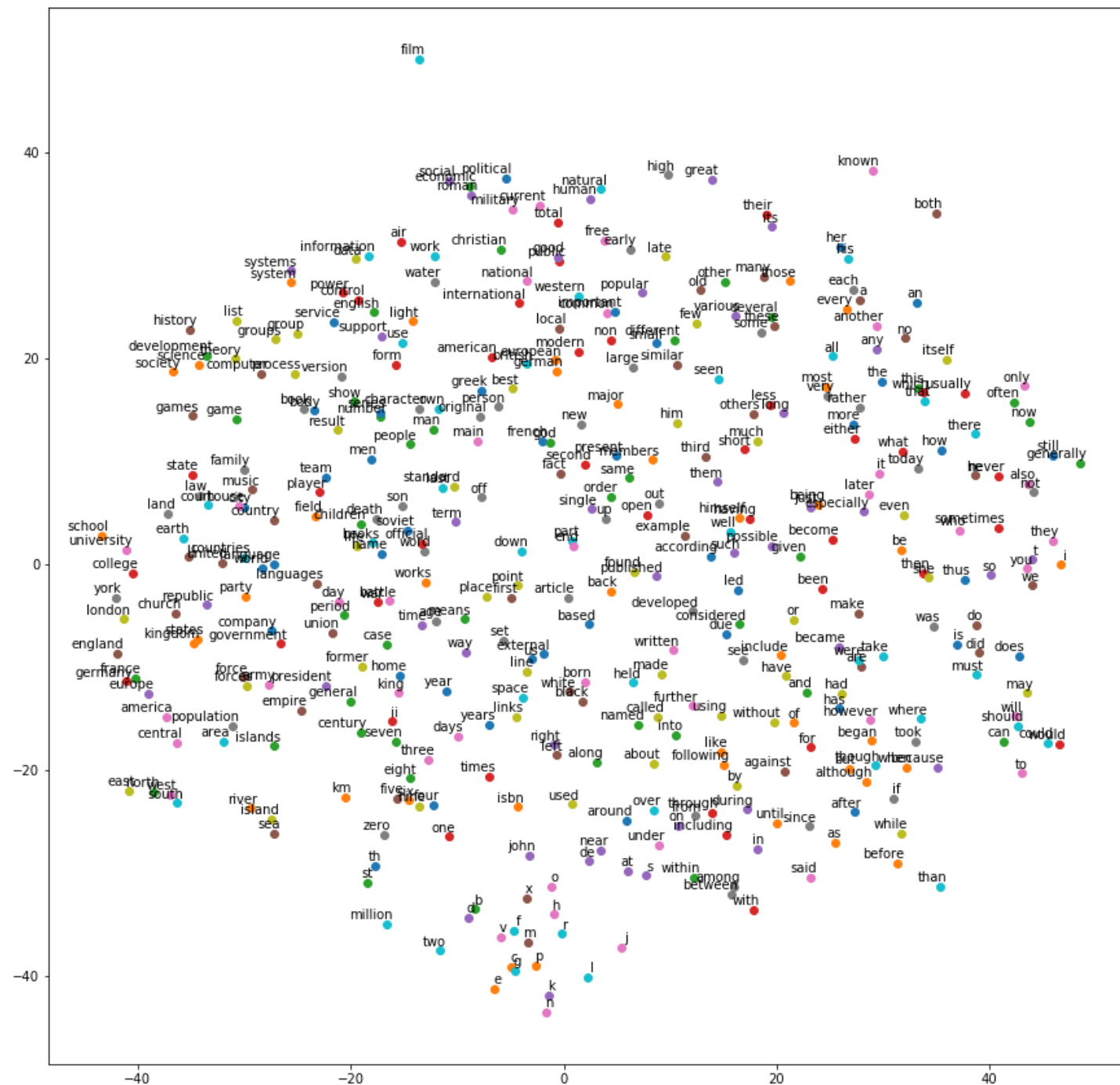
DEEP LEARNING FOR WORD EMBEDDING



<http://zongsoftwarenate.blogspot.com/2017/04/word2vec-model-introduction-skip-gram.html>







# 科技部計畫-新進人員計畫分享

# 科技部新進人員研究計畫

- 計畫名稱：人工智慧音樂家—運用深度嵌入方法與生成對抗網路於和諧性為導向的詞曲生成器之設計
- 學門：工程處-自然語言與語音處理
- 執行期間：108年8月1日到111年7月31日，三年期。
- 申請金額：新臺幣 3,174,080 元
- 核定金額：新臺幣 2,727,000 元



# 摘要

- 隨著深度學習的崛起，對抗式生成網路的相關研究近期獲得大量的關注。目前自動生成的詞曲尚無法與人類作詞和作曲人相媲美，很難產生出有如人類創造一般具有創意性的結果。如果機器能夠生成音樂並具有創意和美感的音樂，這將代表「人工智慧」達成了人類高階智慧行為的「創造」。作詞作曲都是表達的媒介，主要傳遞情感與思想。然而詞曲對於對機器來說僅是符號，難以理解其中的情感，因此生成的歌詞或歌曲難以跳脫既有框架，導致生成結果偏向模仿而缺乏創意。因此，目前的詞曲生成模型的主要瓶頸在於音樂旋律的上下文和諧度不足、歌詞的上下文涵義與情感的不一致性以及創意性的缺乏等。
- 本計畫以流行音樂的詞曲作為生成目標，第一年以流行音樂之要素設計各種音樂特徵的深度表徵學習方法，並且預期運用各種音樂特徵的深度表徵作為生成模型的有效輸入。第二年與第三年之主要目標則為整合變分自動編碼器與生成對抗式網路來設計考慮更為全面的詞曲生成模型。本計畫所設計之深度生成模型框架旨在於優化生成之音樂的和諧性以及生成之歌詞的上下文一致性，並允許使用者可以調整生成結果的創意度。預期本計畫之研究成果將有助於人工智慧音樂家實現人類的高階智慧能力—創造力。

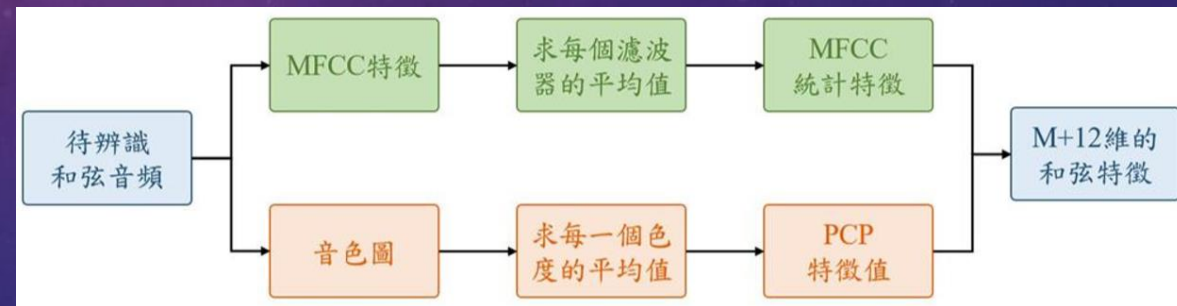


# 第一年 特徵萃取

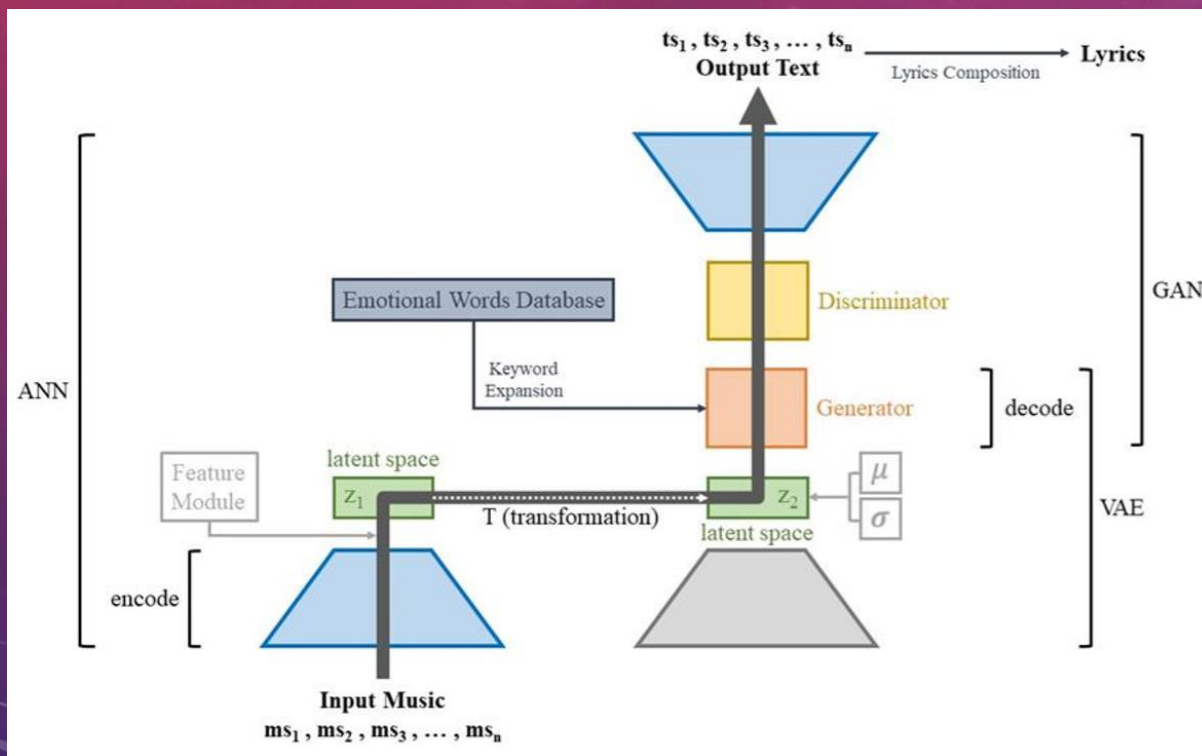


調	小調	大調
C	天真無邪、率真樂天	相思、苦戀、尋覓、渴求
C#/Db	燦爛、浪漫	傷心失意、壓抑、啜泣
D	排除萬難、凱旋而歸	消極、迷思、嚴肅、憂傷
D#/Eb	堅忍、熱忱、誠懇、真摯	恐懼、猶豫、焦慮、憂鬱
E	爭執不斷、吵吵鬧鬧	溫婉柔弱
F	狂躁、瀕臨爆發邊緣	哭號
F#/Gb	旗開得勝、寬心恬靜	矛盾、不滿
G	莊嚴華麗	咬牙切齒、掙扎不安
G#/Ab	難以忘懷、死亡、終結	怨恨、哀痛、缺氧、窒息
A	積極樂觀、愛的宣告	溫文爾雅、欣慰
A#/Bb	無愧於心、熱愛和平	陰森恐怖、嘲諷、唾棄
B	失控、憤恨、嚴苛、應戰	沉著、鎮靜、從容不迫

音色特徵	定義	公式
頻譜滑動率 (Spectral Rolloff)	用來描述頻譜圖形狀。	$\sum_{m=1}^{Rn} M_n[m] = TH \times \sum_{m=1}^N M_n[m]$
過零率 (Zero-Crossing Rate)	計算經過振幅為零的水平線的次數，可用來表示時間域上的頻率程度。	$Z_t = \frac{1}{2} \sum_{n=1}^N  sign(x[n]) - sign(x[n-1]) $
頻譜質心 (Spectral Centroid)	頻譜能量的集中點，主要用來表示聲音訊號組成頻率的平均值，可用來表示聲音的明亮程度，此值越小，說明越多的能量集中在低頻範圍內。	$C_n = \frac{\sum_{m=1}^{\frac{N}{2}} M_n[m] \times m}{\sum_{m=1}^{\frac{N}{2}} M_n[m]}$
梅爾頻率倒譜係數 (Mel-frequency cepstral coefficients, MFCC)	用一組模擬人類聽覺系統之梅爾濾波器來過濾每一臨界頻帶之聲音訊號，並對每一頻帶之對數能量頻譜值做離散餘弦轉換 (discrete cosine transform, DCT)，即可求得每一音框梅爾頻率倒譜係數。	$MFCC_m = \sqrt{\frac{2}{N} \sum_{k=1}^N M_m(k) \cos\left(\frac{\pi m}{M}(k-0.5)\right)}$ $1 \leq m \leq M$

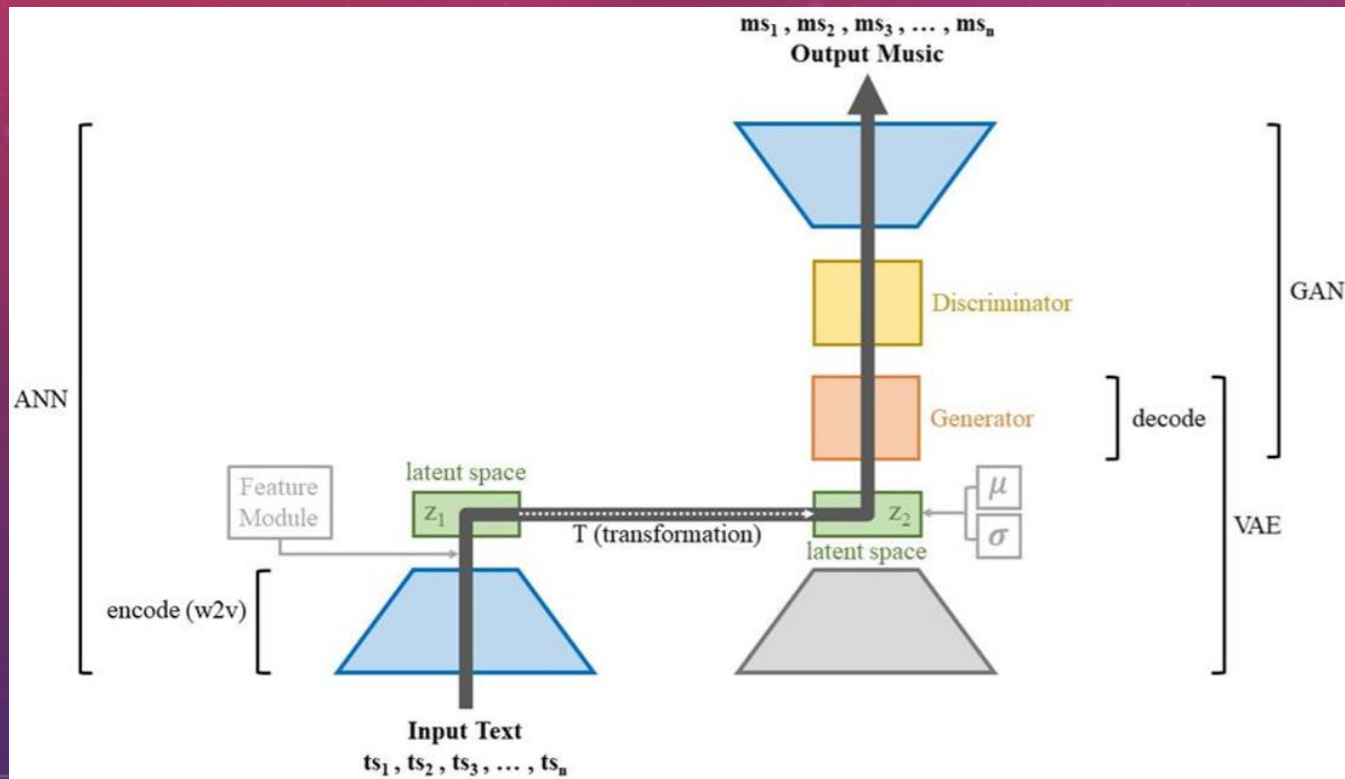


## 第二年 自動作詞



- (1) 如何從歌曲音頻中抓取歌曲的意境或情緒？
- (2) 生成的歌詞是否達到一個基本句子的結構？
- (3) 生成的歌詞是否有達到上下文語義一致性？
- (4) 生成的歌詞是否能對上歌曲的拍點或時間點？

# 第三年 自動作曲



- (1) 如何從歌詞中抓取歌詞的意境或情緒？
- (2) 生成的旋律是否考慮到音樂和諧性的問題？
- (3) 生成的旋律是否具有創新性？
- (4) 生成的旋律是否考慮到歌曲結構的問題？





產學合作計畫

AI客服對話技術研發



# 產學合作

- 計畫名稱：AI客服對話技術研發
- 企業：網訊電通股份有限公司
- 整合型產學計畫：
  - 總計畫主持人：成大電機黃仁曄副教授
  - 子計畫主持人：臺中科大資工系張家瑋助理教授、淡江電機系洪智傑助理教授
- 執行期間：107年12月1日到110年11月30日，三年期。
- 三年總金額：新臺幣 9,000,000 元
- 負責之子計畫每年金額：新臺幣 1,000,000 元

# 負責之子計畫目標

## ➤ 銷售機器人(助理培訓師)

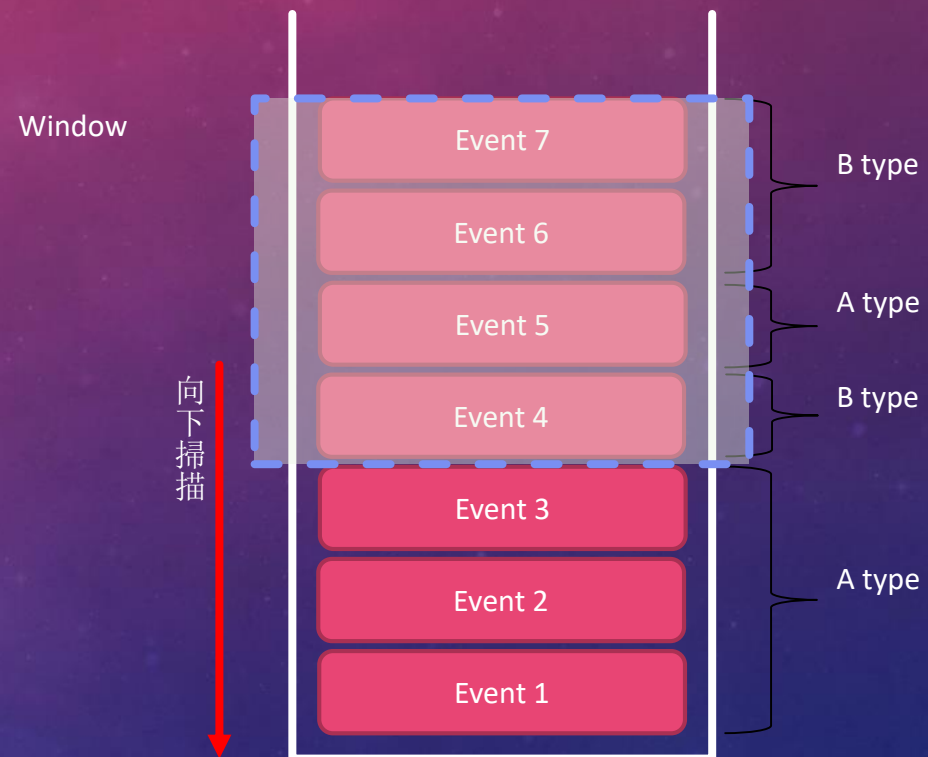
- 藉由觀察使用者語速快慢、性別的不同以及**購買意願**的變化等等，模擬出各種消費者的行為模式，例如：什麼種類的人喜歡購買何種商品，對特定種類的人說特定的**推銷語句**能使得最後**購買的意願提升**，或者可以在幾句話之內**說服**購買此樣商品等等的銷售行為模式，進而建立一個能針對個人特質的不同，**調整並選擇有效率的銷售策略的模型**。
- 我們亦可以藉由此種模型建立的過程，來學習如何從文字對話中，從中模擬及學習人的學習歷程，未來可以應用在教育層面以及培訓人員等等的教學當中。

# 架構

儲存架構圖



Window作用說明

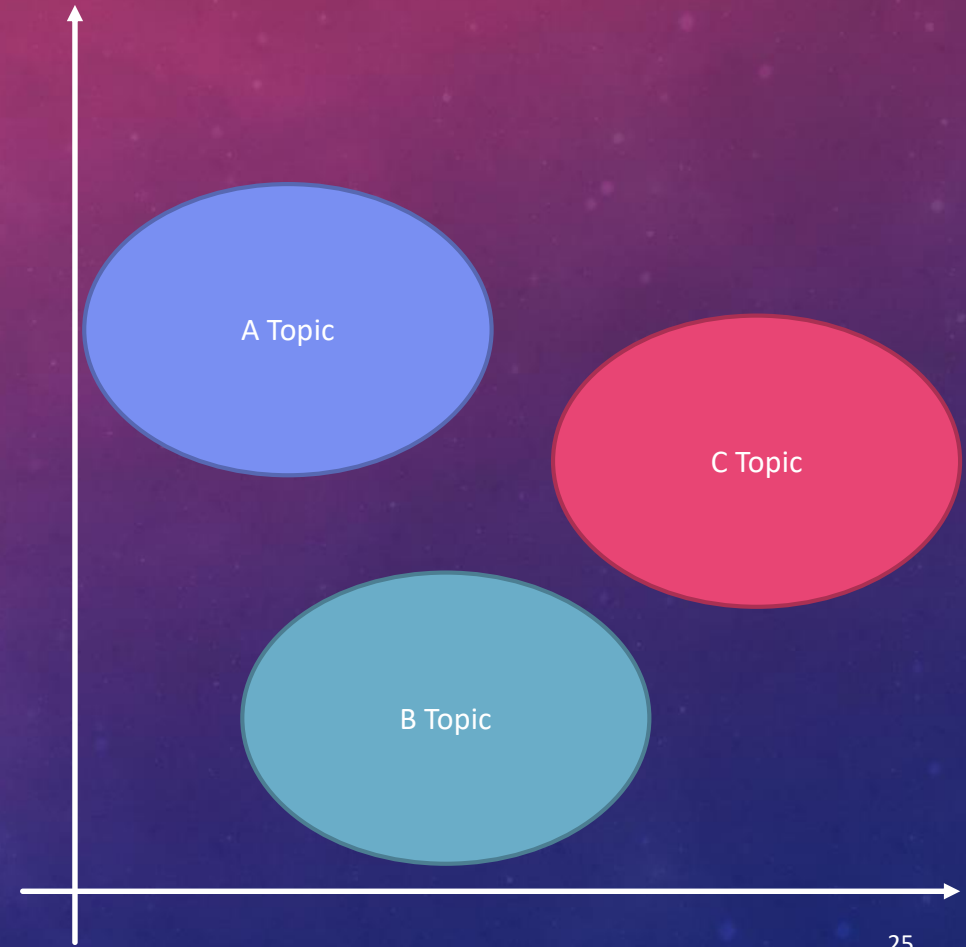
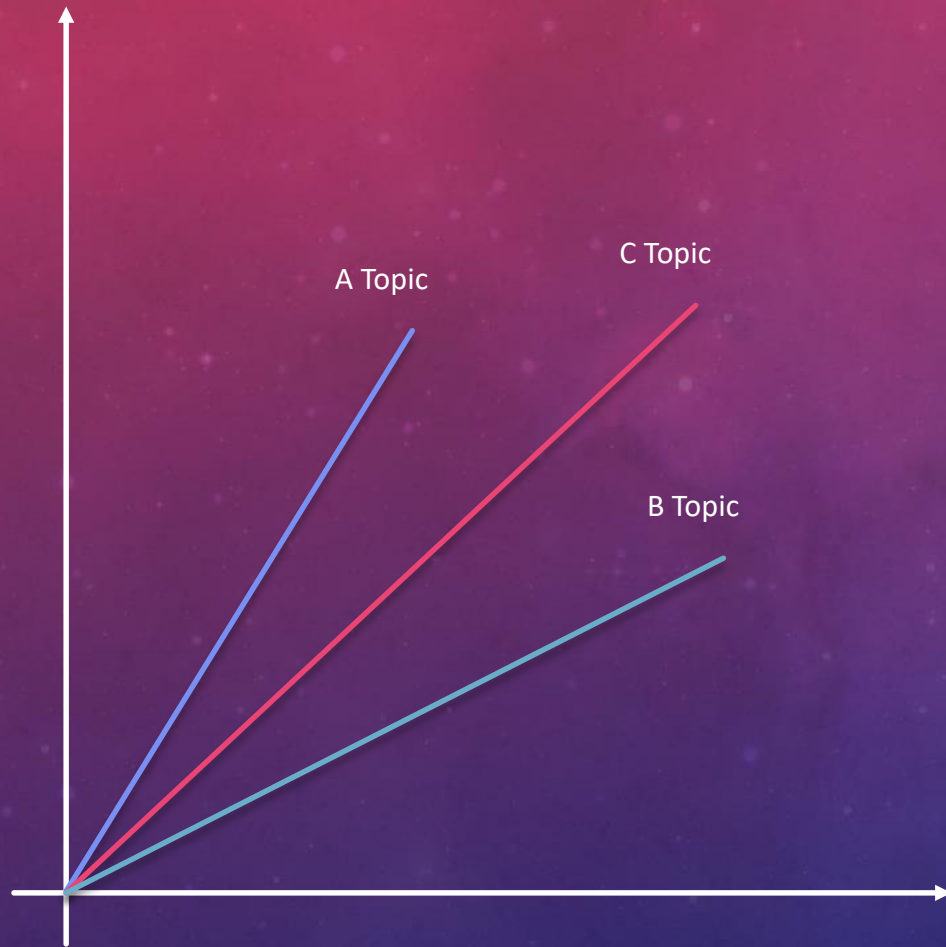


# EVENT單元



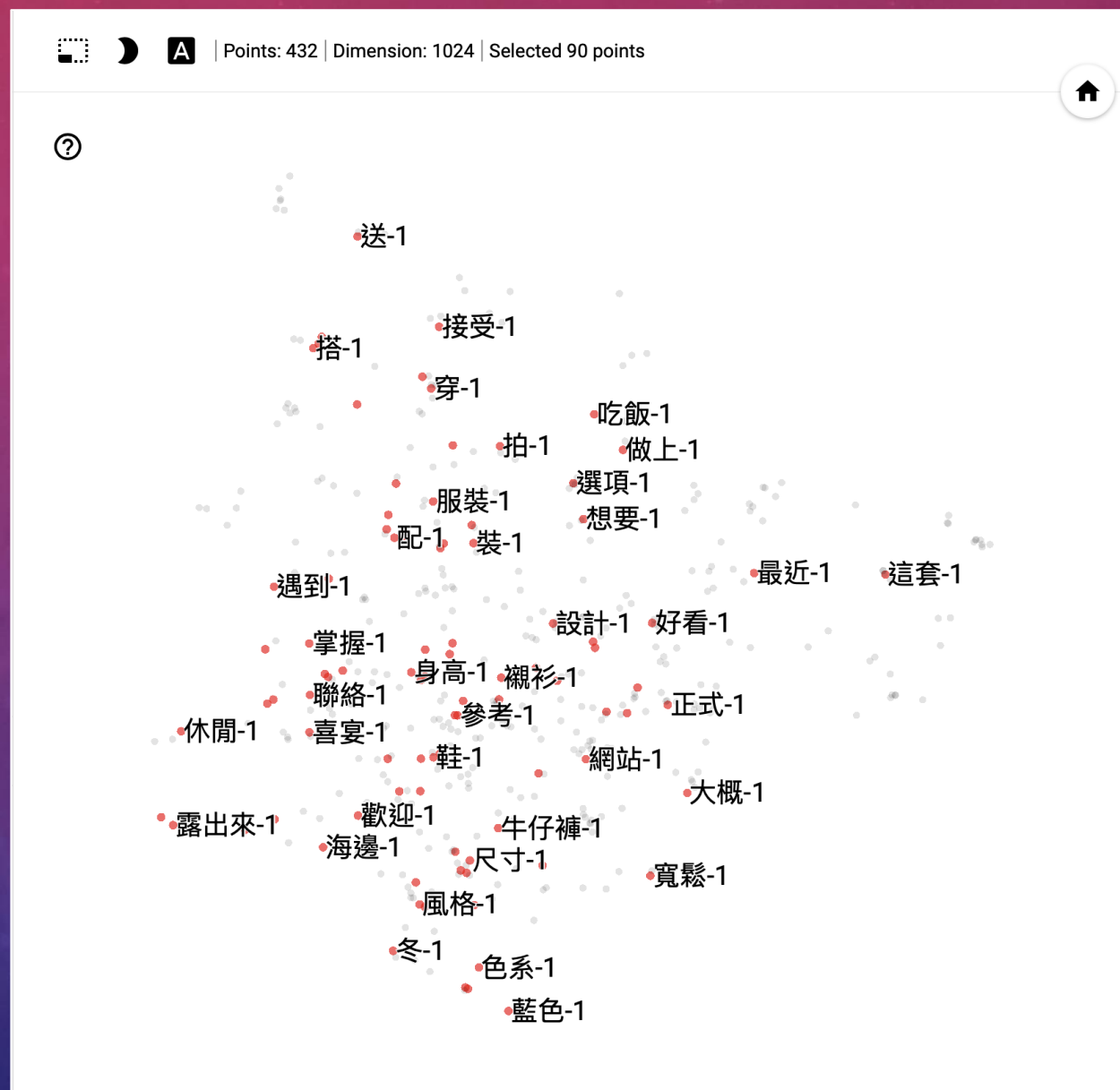


# EVENT CLASSIFICATION BY UNSUPERVISED LEARNING



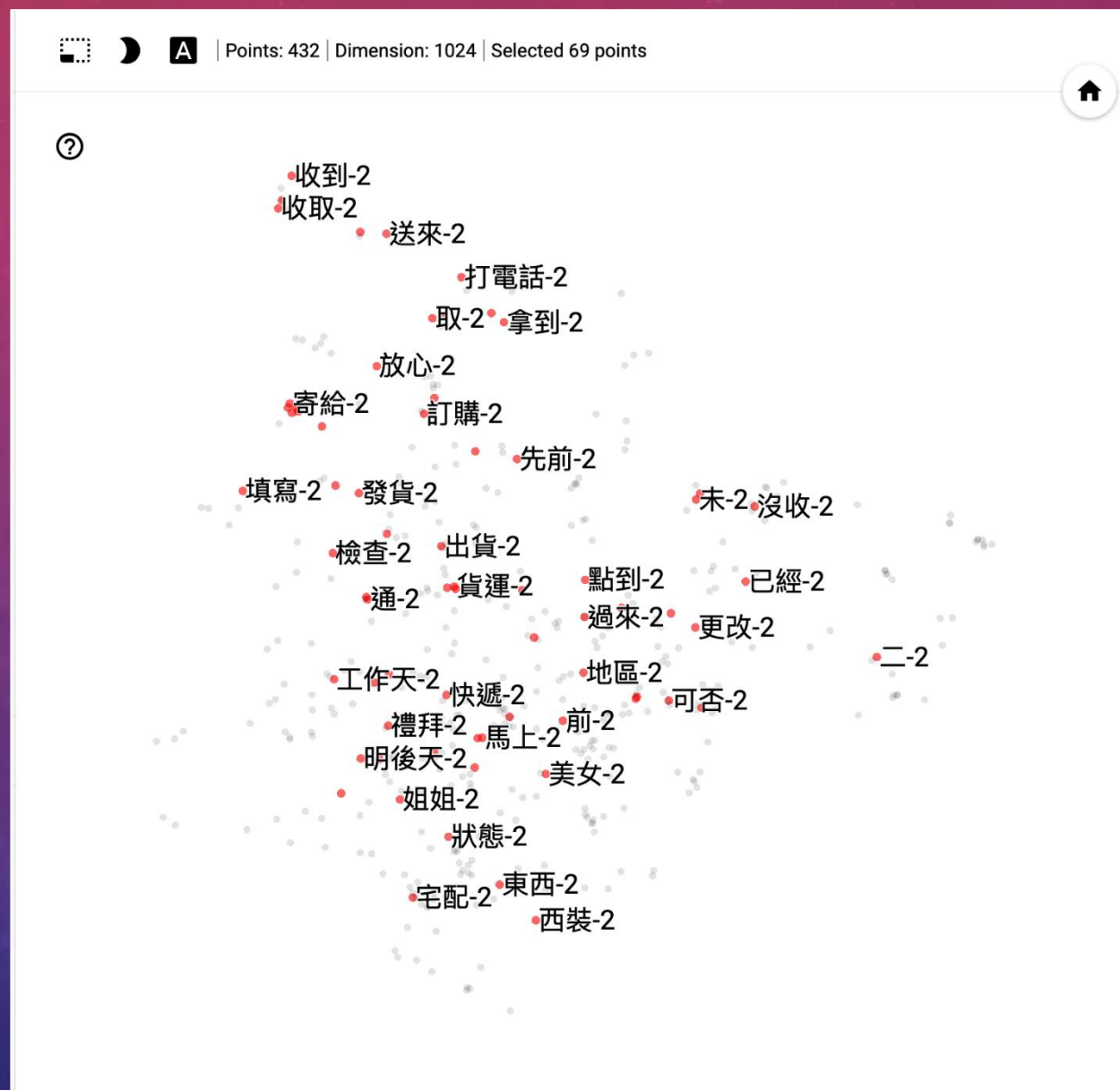
# DISTRIBUTION ANALYSIS

- 第一類標籤（穿搭風格諮詢）的最高權重關鍵字分布狀況



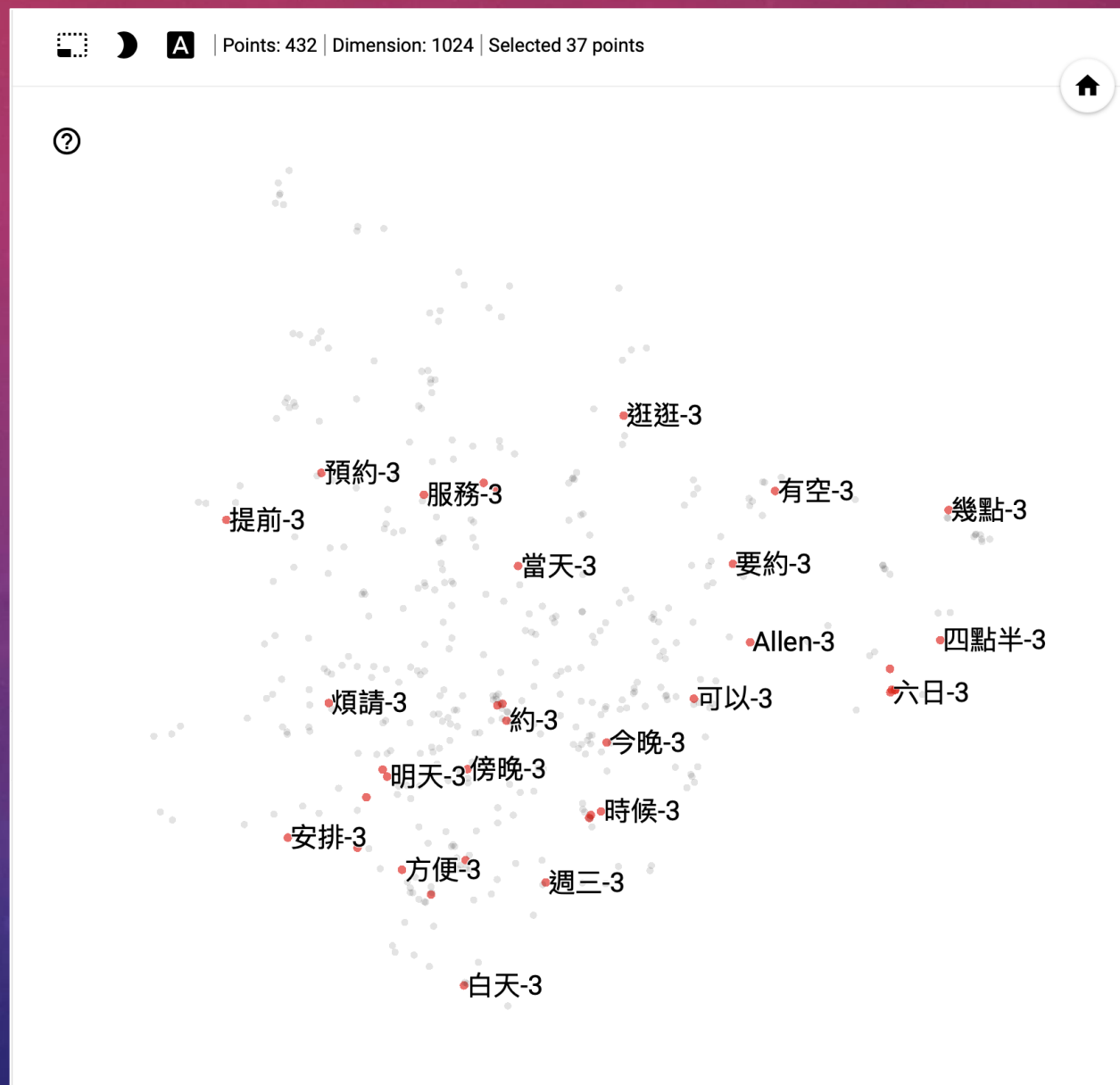
# DISTRIBUTION ANALYSIS

- 第二類標籤（貨運運送情況）的最高權重關鍵字分布狀況



# DISTRIBUTION ANALYSIS

- 第三類標籤（預約服務時間）的最高權重關鍵字分布狀況





The background is a gradient from deep red at the top to dark blue at the bottom, speckled with white dots resembling stars. Overlaid on the left side are several concentric circular patterns. One large circle has a scale from 140 to 260 in increments of 10, with tick marks. Other circles are smaller and some have dashed lines or arrows indicating a path or direction.

# OTHER APPLICATIONS

# AIR QUALITY PREDICTION

Journals & Magazines > IEEE Access > Volume: 6

## Adaptive Deep Learning-Based Air Quality Prediction Model Using the Most Relevant Spatial-Temporal Relations

3 Author(s) Ping-Wei Soh ; Jia-Wei Chang ; Jen-Wei Huang View All Authors

556 Full Text Views

Open Access Comment(s)

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**Abstract**

**Document Sections**

- I. Introduction
- II. Related Works
- III. Problem Definition
- IV. Prediction Model Framework
- V. Experiments

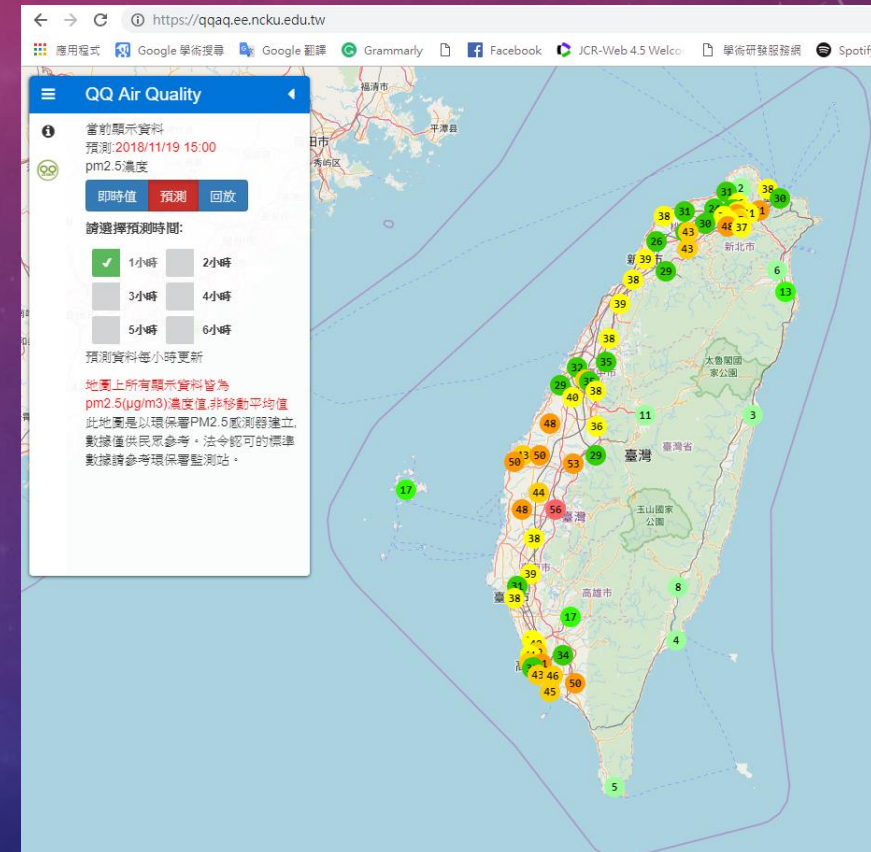
Show Full Outline ▾

**Authors**

**Abstract:**

Air pollution has become an extremely serious problem, with particulate matter having a significantly greater impact on human health than other contaminants. The small diameter of fine particulate matter (PM2.5) allows it to penetrate deep into the alveoli as far as the bronchioles, interfering with a gas exchange within the lungs. Long-term exposure to particulate matter has been shown to cause the cardiovascular disease, respiratory disease, and increase the risk of lung cancers. Therefore, forecasting air quality has also become important to help guide individual actions. This paper aims to forecast air quality for up to 48 h using a combination of multiple neural networks, including an artificial neural network, a convolutional neural network, and a long-short-term memory to extract spatial-temporal relations. The proposed predictive model considers various meteorology data from the previous few hours as well as information related to the elevation space to extract terrain impact on air quality. The model includes trends from multiple locations, extracted from correlations between adjacent locations, and among similar locations in the temporal domain. Experiments employing Taiwan and Beijing data sets show that the proposed model achieves excellent performance and outperforms current state-of-the-art methods.

Published in: IEEE Access ( Volume: 6 )



# 以NBA的應用為例

- DevDays Asia 2016
- 入圍前五
  - 24小時黑客松
  - 3人臨時組團
  - 臨時命題
  - 純好玩





# NBA公開資料 & GAME NBA 2K 能力值

NBA

GamesTop StoriesVideoStandingsStatsPlayersTeams

Stats Home / Player / Jeremy Lin

Menu

Stats Home

Players

Teams

Scores

Schedule

Standings

SEARCH FOR A PLAYER OR TEAM

#7 Jeremy Lin

G | BROOKLYN NETS

Compare Player

HT	6-3	WT	200 lbs	PRIOR	Harvard/United States	PTS	14.2	REB	3.7	AST	6.3	P/E	15.1
AGE	28 112d	BORN	8/23/88	DRAFT	Undrafted	EXP	6 yrs						

Profile

Traditional Splits

BY YEAR	GP	MIN	PTS	FGM	FGA	FG%	3PM	3PA	3P%
2016-17	6	25.8	14.2	5.0	11.0	45.5	1.2	3.7	31.8
2015-16	78	26.3	11.7	3.8	9.3	41.2	1.0	2.9	33.6
2014-15	74	25.8	11.2	3.7	8.8	42.4	0.9	2.4	36.9
2013-14	71	28.9	12.5	4.2	9.3	44.6	1.2	3.2	35.8
2012-13	82	32.2	13.4	4.8	10.9	44.1	1.1	3.1	33.9
2011-12	35	26.9	14.6	4.9	10.9	44.6	0.7	2.1	32.0
2010-11	29	9.8	2.6	1.0	2.5	38.9	0.0	0.2	20.0

JEREMY LIN

PG | S

HEIGHT

75"

WEIGHT

90 KG

AGE

23

73

OFFENSE

68

DEFENSE

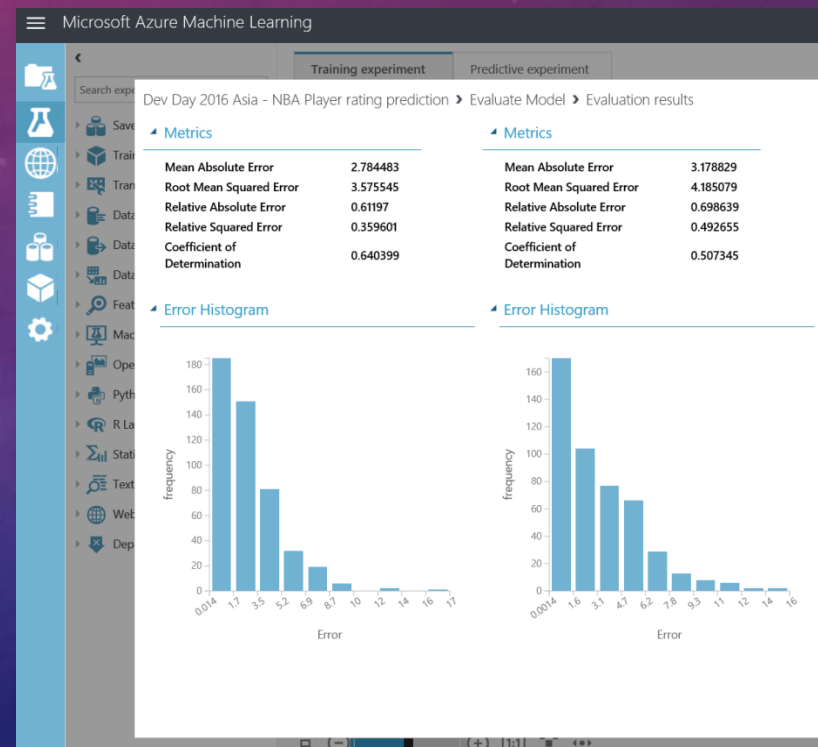
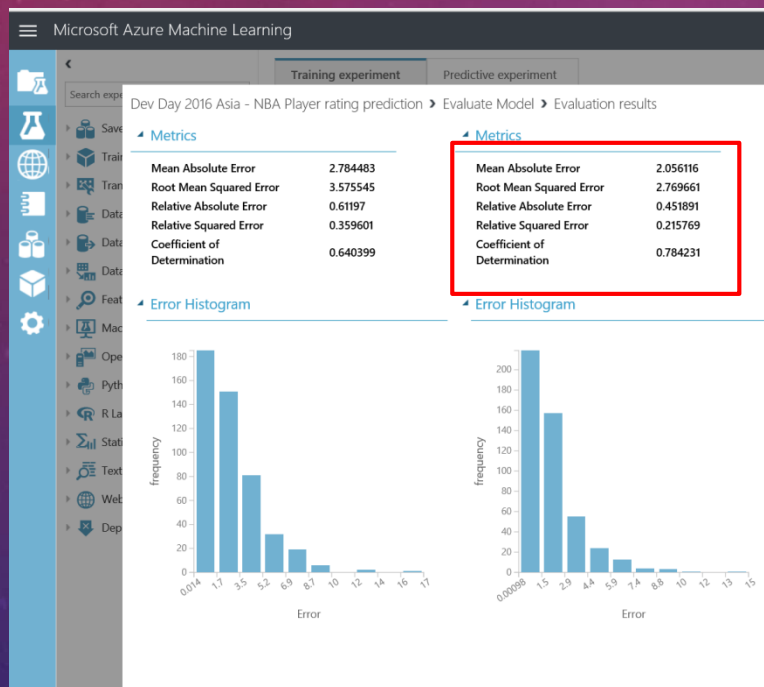
JEREMY LIN PG   SG										
HEIGHT 75" WEIGHT 90 KG AGE 23										
OFFENSE 73 DEFENSE 68 REBOUND 41										
LB	ALL POSITIONS			RB	LT	NEW YORK KNICKS				
NAME	POS	RTG	IN	OUT	PER D	POST D	HNOL	REB	I.Q.	
T.Chandler	C	77	C+	F	C	A	F	A	B+	
B.Davis	PG	73	B-	B	B	D	A	D-	B+	
I.Shumpert	PG	72	C+	C+	A-	D	B	D-	B+	
L.Fields	SG	72	C+	B+	C+	F	C+	C+	B-	
T.Douglas	PG	69	C	B+	B+	F	B-	D-	B-	
J.Lin	PG	69	C+	C+	B	F	B+	D-	B+	

- 資料來源
  - 2K Games
  - NBA

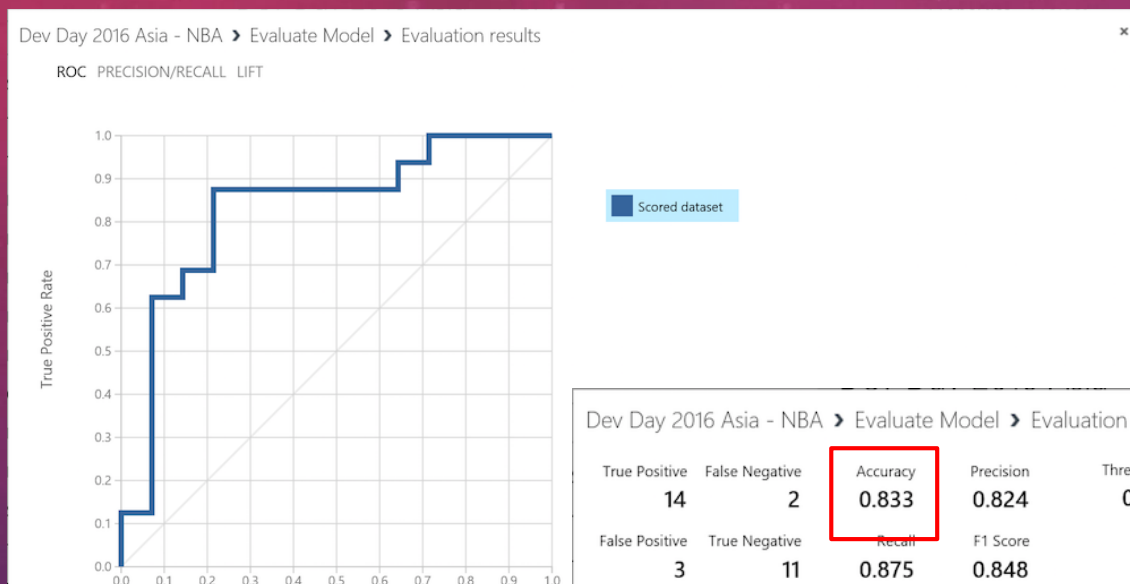


# 以NBA的應用為例

- NBA 2K17能力預測



# NBA季後賽預測



Dev Day 2016 Asia - NBA > Evaluate Model > Evaluation results

True Positive	False Negative	Accuracy	Precision	Threshold	AUC
14	2	0.833	0.824	0.64	0.830
False Positive	True Negative	Recall	F1 Score		
3	11	0.875	0.848		
Positive Label	Negative Label				
1	0				

Score Bin	Positive Examples	Negative Examples	Fraction Above Threshold	Accuracy	F1 Score	Precision	Recall	Negative Precision	Negative Recall	Cumulative AUC
(0.900,1.000]	1	0	0.033	0.500	0.118	1.000	0.063	0.483	1.000	0.000
(0.800,0.900]	6	1	0.267	0.667	0.583	0.875	0.438	0.591	0.929	0.009
(0.700,0.800]	3	1	0.400	0.733	0.714	0.833	0.625	0.667	0.857	0.054
(0.600,0.700]	4	1	0.567	0.833	0.848	0.824	0.875	0.846	0.786	0.103
(0.500,0.600]	0	4	0.700	0.700	0.757	0.667	0.875	0.778	0.500	0.353
(0.400,0.500]	0	2	0.767	0.633	0.718	0.609	0.875	0.714	0.357	0.478
(0.300,0.400]	2	2	0.900	0.633	0.744	0.593	1.000	1.000	0.214	0.616
(0.200,0.300]	0	1	0.933	0.600	0.727	0.571	1.000	1.000	0.143	0.688
(0.100,0.200]	0	1	0.967	0.567	0.711	0.552	1.000	1.000	0.071	0.759

# 資料驅動創新應用

- 文字、聲音、影像、時序性
  - 自然語言處理
  - 語音辨識
  - 影像辨識
  - 物聯網應用
- 數值與非數值
  - 連續性
  - 離散性、類別

The background is a gradient from deep red at the top to dark blue at the bottom, speckled with white dots resembling stars. Overlaid on the left side are several concentric circular patterns and arcs in a lighter red/pink color. Some of these arcs have small arrowheads pointing in different directions, suggesting a sense of rotation or movement. There are also some faint numerical markings along one of the larger circular paths.

# OPEN DATASETS



# UC IRVINE MACHINE LEARNING REPOSITORY

- <http://archive.ics.uci.edu/ml/datasets.html>

UCI

Machine Learning Repository  
Center for Machine Learning and Intelligent Systems

資料型態

任務

資料筆數

Search

Table View List View

Default Task

Classification (314)  
Regression (82)  
Clustering (72)  
Other (54)

Attribute Type

Categorical (37)  
Numerical (273)  
Mixed (55)

Data Type

Multivariate (324)  
Univariate (19)  
Sequential (44)  
Time-Series (79)  
Text (44)  
Domain-Theory (23)  
Other (21)

Area

Life Sciences (98)  
Physical Sciences (47)  
CS/Engineering (148)  
Social Sciences (24)  
Business (26)  
Game (10)  
Other (69)

# Attributes

Less than 10 (99)  
10 to 100 (195)  
Greater than 100 (76)

# Instances

Less than 100 (25)  
100 to 1000 (149)  
Greater than 1000 (220)

Format Type

Matrix (292)  
Non-Matrix (134)

Name	Data Types	Default Task	Attribute Types	# Instances	# Attributes	Year
 Abalone	Multivariate	Classification	Categorical, Integer, Real	4177	8	1995
 Adult	Multivariate	Classification	Categorical, Integer	48842	14	1996
 Annealing	Multivariate	Classification	Categorical, Integer, Real	798	38	
 Anonymous Microsoft Web Data		Recommender-Systems	Categorical	37711	294	1998
 Arrhythmia	Multivariate	Classification	Categorical, Integer, Real	452	279	1998
 Artificial Characters	Multivariate	Classification	Categorical, Integer, Real	6000	7	1992
 Audiology (Original)	Multivariate	Classification	Categorical	226		1987
 Audiology (Standardized)	Multivariate	Classification	Categorical	226	69	1992
 Auto MPG	Multivariate	Regression	Categorical, Real	398	8	1993
 Automobile	Multivariate	Regression	Categorical, Integer, Real	205	26	1987
 Badges	Univariate, Text	Classification		294	1	1994

0

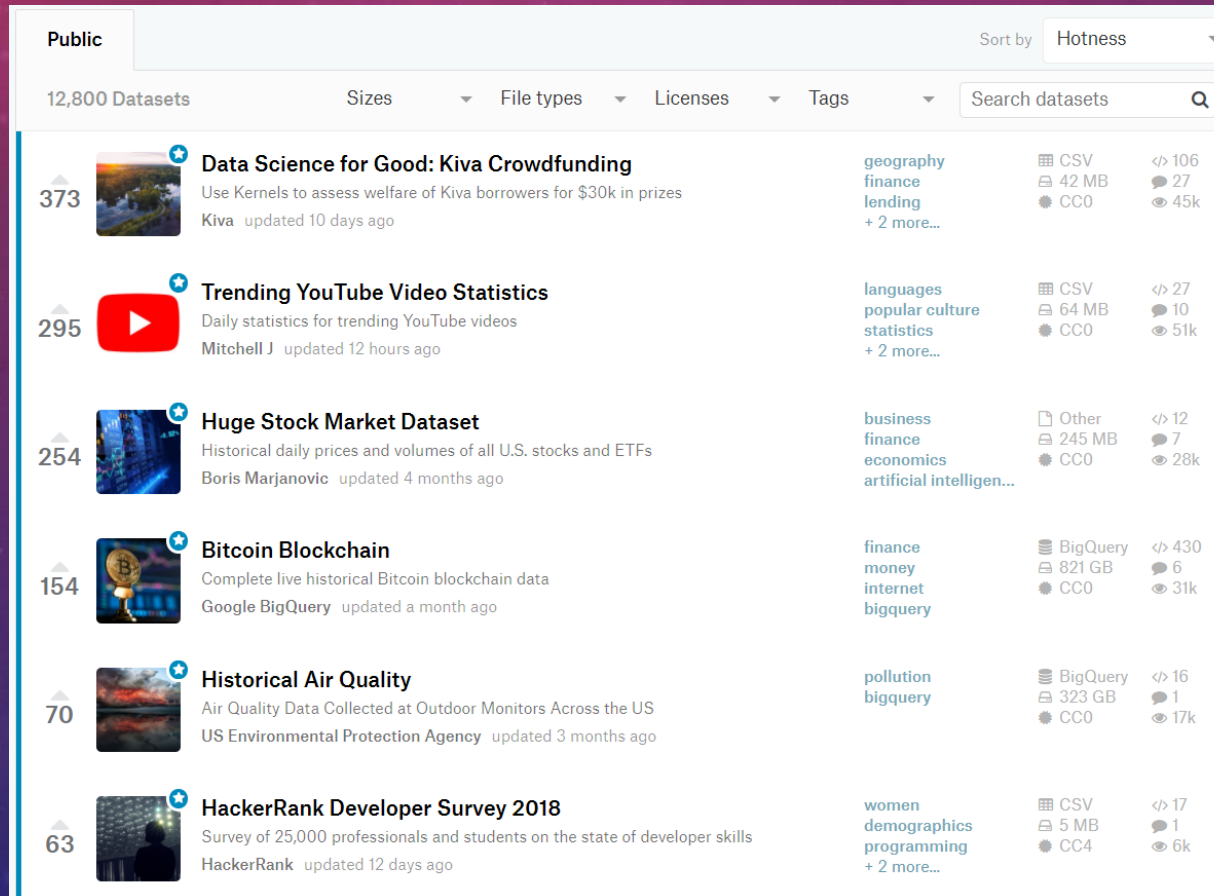
任務

資料型態

資料筆數

# KAGGLE DATASETS

- <https://www.kaggle.com/datasets>

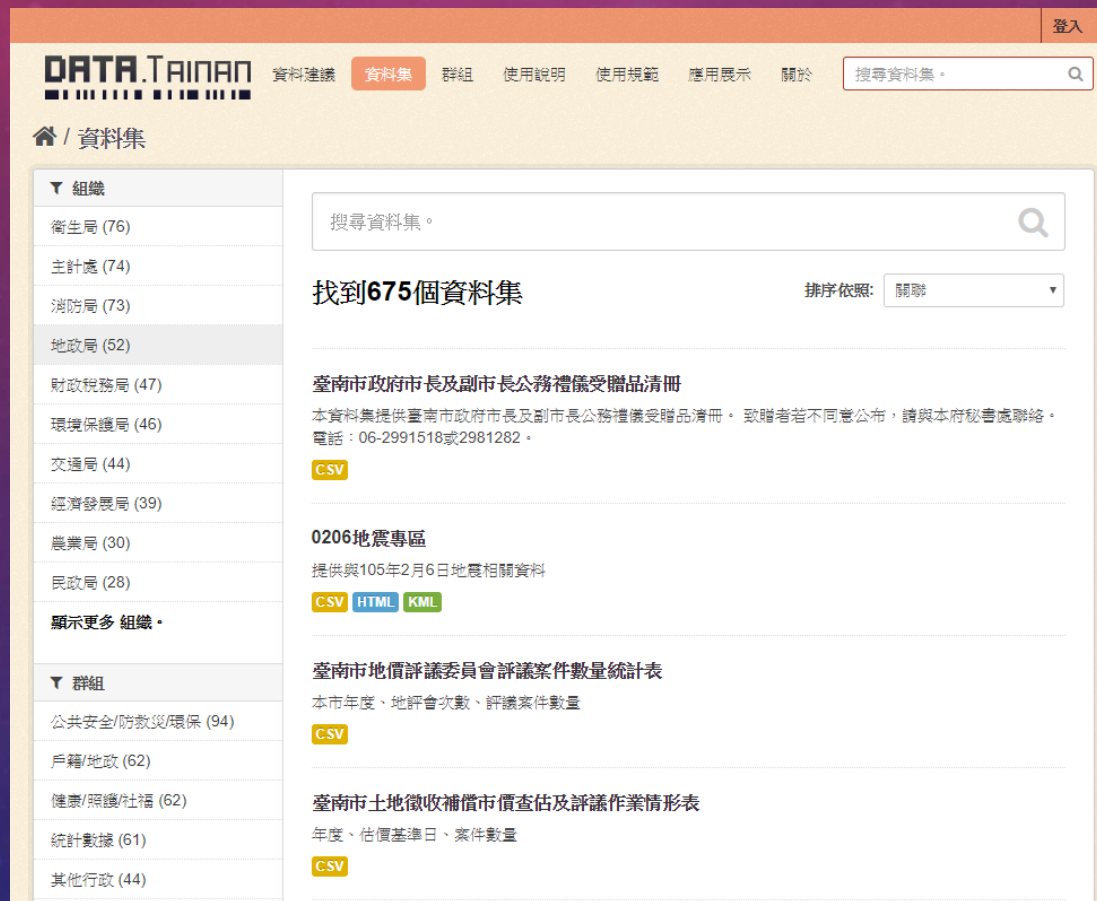


The screenshot displays the Kaggle Datasets interface. At the top, there's a 'Public' tab and a 'Sort by' dropdown set to 'Hotness'. Below this, a header bar shows '12,800 Datasets' and filters for 'Sizes', 'File types', 'Licenses', and 'Tags'. A search bar is also present. The main content area lists six datasets, each with a rank, a thumbnail, a title, a description, the creator, the update time, and a list of tags. The datasets are:

Rank	Thumbnail	Title	Description	Creator	Updated	Tags	File Type	Size	License	Views
373		<b>Data Science for Good: Kiva Crowdfunding</b>	Use Kernels to assess welfare of Kiva borrowers for \$30k in prizes	Kiva	updated 10 days ago	geography, finance, lending, + 2 more...	CSV	42 MB	CC0	106, 27, 45k
295		<b>Trending YouTube Video Statistics</b>	Daily statistics for trending YouTube videos	Mitchell J	updated 12 hours ago	languages, popular culture, statistics, + 2 more...	CSV	64 MB	CC0	27, 10, 51k
254		<b>Huge Stock Market Dataset</b>	Historical daily prices and volumes of all U.S. stocks and ETFs	Boris Marjanovic	updated 4 months ago	business, finance, economics, artificial intelligen...	Other	245 MB	CC0	12, 7, 28k
154		<b>Bitcoin Blockchain</b>	Complete live historical Bitcoin blockchain data	Google BigQuery	updated a month ago	finance, money, internet, bigquery	BigQuery	821 GB	CC0	430, 6, 31k
70		<b>Historical Air Quality</b>	Air Quality Data Collected at Outdoor Monitors Across the US	US Environmental Protection Agency	updated 3 months ago	pollution, bigquery	BigQuery	323 GB	CC0	16, 1, 17k
63		<b>HackerRank Developer Survey 2018</b>	Survey of 25,000 professionals and students on the state of developer skills	HackerRank	updated 12 days ago	women, demographics, programming, + 2 more...	CSV	5 MB	CC4	17, 1, 6k

# 臺南市開放資料

- <http://data.tainan.gov.tw/dataset>



The screenshot displays the Tainan Open Data website interface. At the top, there is a navigation bar with the 'DATA.TAINAN' logo, a search bar, and links for '資料建議' (Data Suggestion), '資料集' (Dataset), '群組' (Group), '使用說明' (Usage Guide), '使用規範' (Usage Policy), '應用展示' (Application Showcase), and '關於' (About). A '登入' (Login) button is located in the top right corner.

The main content area is titled '資料集' (Dataset). On the left, there is a sidebar with a tree view of categories: '組織' (Organization) and '群組' (Group). Under '組織', various government departments are listed with their respective dataset counts, such as '衛生局 (76)', '主計處 (74)', '消防局 (73)', '地政局 (52)', '財政稅務局 (47)', '環境保護局 (46)', '交通局 (44)', '經濟發展局 (39)', '農業局 (30)', '民政局 (28)', and a link to '顯示更多 組織'. Under '群組', categories like '公共安全/防救災/環保 (94)', '戶籍/地政 (62)', '健康/照護/社福 (62)', '統計數據 (61)', and '其他行政 (44)' are listed.

The main content area shows a search bar with the text '搜尋資料集。' and a magnifying glass icon. Below the search bar, it states '找到675個資料集' (Found 675 datasets) and a '排序依照: 關聯' (Sort by: Related) dropdown menu. Three dataset entries are displayed:

- 臺南市政府市長及副市長公務禮儀受贈品清冊**  
本資料集提供臺南市政府市長及副市長公務禮儀受贈品清冊。致贈者若不同意公布，請與本府秘書處聯絡。電話：06-2991518或2981282。  
CSV
- 0206地震專區**  
提供與105年2月6日地震相關資料  
CSV HTML KML
- 臺南市地價評議委員會評議案件數量統計表**  
本市年度、地評會次數、評議案件數量  
CSV
- 臺南市土地徵收補償市價查估及評議作業情形表**  
年度、估價基準日、案件數量  
CSV



THANK YOU