



人工智慧金融服務創新應用 (AI for Financial Services Innovation and Application)

時間: 2019年4月19日(五)下午1:00-3:00

地點:聖約翰科技大學行政大樓 N409 周德新廳 (新北市淡水區淡金路四段499號) 主辦單位:聖約翰科技大學人文科技前瞻計畫學術講座



<u>Min-Yuh Day</u> <u>戴敏育</u> Assistant Professor

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淡江大學 資訊管理學系



http://mail. tku.edu.tw/myday/ 2019-04-19



戴敏育博士 (Min-Yuh Day, Ph.D.) 淡江大學資管系專任助理教授 中央研究院資訊科學研究所訪問學人 國立台灣大學資訊管理博士

Publications Co-Chairs, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013-)

Program Co-Chair, IEEE International Workshop on Empirical Methods for Recognizing Inference in TExt (IEEE EM-RITE 2012-) Workshop Chair, The IEEE International Conference on Information Reuse and Integration (IEEE IRI)







Outline

Al in FinTech Financial Services Innovation and Application

Al and Big Data Analytics in Finance

- 金融科技 (Spring 2017) (EMBA IMTKU)
 (Financial Technology, FinTech)
- 財務金融大數據分析 (Fall 2017) (EMBA IMTKU)
 Big Data Analytics in Finance
- 人工智慧投資分析 (Fall 2018) (EMBA IMTKU)
 - Artificial Intelligence for Investment Analysis
- 智慧金融大數據分析 (Fall 2019) (MBA DBETKU)
 Al in Finance Big Data Analytics
- 人工智慧財務金融應用 (Fall 2019) (EMBA IMTKU)
 AI in Financial Application

Journal Publications

- Min-Yuh Day, Paoyu Huang, and Yensen Ni (2019), "Trading as sharp movements in oil prices and technical trading signals emitted with big data concerns", Physica A: Statistical Mechanics and its Applications, Volume 525, 1 July 2019, pp. 349-372.
- Min-Yuh Day, Manhwa Wu, Paoyu Huang, and Yensen Ni (2018), "Investing Strategies as the Sharp Movement in Exchange Rates Occurred– Evidence for the Constituent Stocks of SSE 50 and TW 50", The Journal of Investing, , Volume 27, Issue 4, Winter 2018, pp. 58-68.
- Min-Yuh Day, Paoyu Huang, Yensen Ni, and Yuhsin Chen (2018), "Do Implicit Phenomena Matter? Evidence from China Stock Index Futures", The Journal of Alternative Investments, Volume 21, Issue 1, Summer 2018, pp. 79-91.
- Yensen Ni, Yirung Cheng, Paoyu Huang, and <u>Min-Yuh Day</u> (2018), "Trading strategies in terms of continuous rising (falling) prices or continuous bullish (bearish) candlesticks emitted", Physica A: Statistical Mechanics and its Applications, Volume 501, 1 July 2018, pp. 188-204.
- Min-Yuh Day, Paoyu Huang, Yensen Ni, and Yuhsin Chen (2018), "Do Intraday Large Price Changes Matter for Trading Index Futures? Evidence from China Futures Markets", Journal of Financial Studies, Volume 26, Number 2, June 2018, pp. 139-174.

Conference Publications

- Min-Yuh Day, Tun-Kung Cheng and Jheng-Gang Li (2018), "AI Robo-Advisor with Big Data Analytics for Financial Services", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018.
- Min-Yuh Day, Jian-Ting Lin and Yuan-Chih Chen (2018), "Artificial Intelligence for Conversational Robo-Advisor", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018.
- 3. Min-Yuh Day and Chao-Yu Chen (2018),

"Artificial Intelligence for Automatic Text Summarization", in Proceedings of the 2018 IEEE 18th International Conference on Information Reuse and Integration (IEEE IRI 2018), Salt Lake City, Utah, USA, July 7-9, 2018.

Conference Publications

- Min-Yuh Day, Tun-Kung Cheng and Jheng-Gang Li (2018), "Artificial Intelligence for Time Series Forecasting in Financial Markets", International Conference on INTERNET STUDIES (NETs 2018), Takamatsu, Japan, April 2-4, 2018.
- Min-Yuh Day, Chao-Yu Chen, Wan-Chu Huang, I-Hsuan Huang, Shi-Ya Zheng, Tz-Rung Chen, Min-Chun Kuo, Yue-Da Lin, and Yi-Jing Lin (2017), "IMTKU Question Answering System for World History Exams at NTCIR-13 QA Lab-3", The 13th NTCIR Conference on Evaluation of Information Access Technologies (NTCIR-13), Tokyo, Japan, December 5-8, 2017.
- Min-Yuh Day and Yue-Da Lin, "Deep Learning for Sentiment Analysis on Google Play Consumer Review", The 6th IEEE International Workshop on Empirical Methods for Recognizing Inference in Text (IEEE EM-RITE 2017), August 4-6, 2017, in Proceedings of the 2017 IEEE 18th International Conference on Information Reuse and Integration (IEEE IRI 2017), San Diego, CA, USA, August 4-6, 2017.

Conference Publications

- 林建廷、陳元致、王慶宇、鄧旭廷、邱少文、<u>戴敏育</u>,發展人工智慧對話式理財機器人,第29屆國際資訊 管理學術研討會 The 29th International Conference of Information Management (ICIM2018), Taichung, Taiwan, June 3, 2018.
- 蔡宗霖、劉鈞霖、李家慶、陳品仔、林建廷、<u>戴敏育</u>
 ,人工智慧保險業智能客服,第29屆國際資訊管理學術 研討會 The 29th International Conference of Information Management (ICIM2018), Taichung, Taiwan, June 3, 2018.
- 陳昭妤、<u>戴敏育</u>,人工智慧自動文本摘要研究,第29屆 國際資訊管理學術研討會 The 29th International Conference of Information Management (ICIM2018), Taichung, Taiwan, June 3, 2018.

AIWISFIN

人工智慧對話式理財機器人

- 榮獲 2018 全國大專校院資訊應用服務創新競賽 資訊應用組 (IP1) 第一名 獎金2萬元
- 榮獲 2018 全國大專校院資訊應用服務創新競賽
 玉山銀行金融科技趨勢應用組第一名,獎金5萬元
- 榮獲 2018 日盛黑客松證券組 第三名,獎金5萬元
- 榮獲 2018 淡江資管畢業專題競賽 第一名,獎金1萬元

AIWISFIN

人工智慧對話式理財機器人



https://www.youtube.com/watch?v=sEhmyoTXmGk

Posts

2018第23屆大專校院資訊應用服務創新競賽





https://innoserve.tca.org.tw/award.aspx

Al for **Financial Services** Innovation and Application

Paolo Sironi (2016)

FinTech Innovation:

From Robo-Advisors to Goal Based Investing and Gamification,

Wiley



John M. Jordan (2012),

Information, Technology, and Innovation:

Resources for Growth in a Connected World,

Wiley



Resources for Growth in a Connected World

Brett King (2012), Bank 3.0

Why banking is no longer somewhere you go, but something you do, Marshall Cavendish International Asia Pte Ltd



Brett King (2014), Breaking Banks:

The Innovators, Rogues, and Strategists Rebooting Banking

Wiley



Chris Skinner (2014),

Digital Bank:

Strategies to Launch or Become a Digital Bank,

Marshall Cavendish International Asia Pte Ltd



Source: https://www.amazon.com/Digital-Bank-Strategies-Launch-Become/dp/9814516465

Everett M. Rogers (2003), Diffusion of Innovations,

5th Edition, Free Press



(Rogers, 1962; 1971; 1983; 1995; 2003)

Joseph A. Schumpeter, The Theory of Economic Development:

An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle,

Transaction Publishers, 1982



(Schumpeter, 1912)

Source: https://www.amazon.com/Theory-Economic-Development-Interest-Business/dp/0878556982

Artificial Intelligence (AI)



Business Analytics





Definition of **Artificial Intelligence** (A.I.)

Artificial Intelligence

"... the SCIENCE and engineering of making intelligent machines" (John McCarthy, 1955)

Artificial Intelligence

"... technology that thinks and acts like humans"

Source: https://digitalintelligencetoday.com/artificial-intelligence-defined-useful-list-of-popular-definitions-from-business-and-science/

Artificial Intelligence

"... intelligence exhibited by machines or software"

4 Approaches of Al



4 Approaches of Al

2.	3.
Thinking Humanly:	Thinking Rationally:
The Cognitive	The "Laws of Thought"
Modeling Approach	Approach
1.	4.
Acting Humanly:	Acting Rationally:
The Turing Test	The Rational Agent
Approach (1950)	Approach

Al Acting Humanly: The Turing Test Approach (Alan Turing, 1950)

- Natural Language Processing (NLP)
- Knowledge Representation
- Automated Reasoning
- Machine Learning (ML)
- Computer Vision
- Robotics

Artificial Intelligence (A.I.) Timeline

A.I. TIMELINE



1961

UNIMATE



1950

TURING TEST Computer scientist Alan Turing proposes a intelligence' is coined test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence

1955 A.I. BORN

Term 'artificial First industrial robot, Unimate, goes to work by computer scientist, at GM replacing John McCarthy to describe "the science assembly line and engineering of making intelligent machines"

1964

Pioneering chatbot developed by Joseph Weizenbaum at MIT with humans

1966 **A.I.**

WINTER

playing computer from Many false starts and dead-ends leave A.I. out champion Garry Kasparov

1998

Cynthia Breazeal at MIT introduces KISmet, an IBM defeats world chess emotionally intelligent robot insofar as it detects and responds to people's feelings

🔅 AlphaGo



1999

AIBO

Sony launches first consumer robot pet dog autonomous robotic AiBO (Al robot) with skills and personality that develop over time



ODD

and clean homes

2011

Apple integrates Siri, an intelligent virtual vacuum cleaner from assistant with a voice iRobot learns to navigate interface, into the iPhone 4S



2011

WATSON

IBM's question answering computer Watson wins first place on popular \$1M prize television guiz show

2014

The 'first electronic

Shakey is a general-

that reasons about

its own actions

person' from Stanford,

purpose mobile robot

Eugene Goostman, a chatbot passes the Turing Test with a third of judges believing Eugene is human

2014

Amazon launches Alexa, Microsoft's chatbot Tay an intelligent virtual assistant with a voice interface that completes inflammatory and shopping tasks

2016

1997

DEEP BLUE

Deep Blue, a chess-

goes roque on social media making offensive racist

2017

ALPHAGO

Google's A.I. AlphaGo beats world champion Ke Jie in the complex board game of Go, notable for its vast number (2¹⁷⁰) of possible positions

Artificial Intelligence Machine Learning & Deep Learning

ARTIFICIAL INTELLIGENCE



Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.

AI, ML, DL

Artificial Intelligence (AI)



Source: https://leonardoaraujosantos.gitbooks.io/artificial-inteligence/content/deep_learning.html

3 Machine Learning Algorithms



Source: Enrico Galimberti, http://blogs.teradata.com/data-points/tree-machine-learning-algorithms/

Machine Learning (ML) / Deep Learning (DL)



Source: Jesus Serrano-Guerrero, Jose A. Olivas, Francisco P. Romero, and Enrique Herrera-Viedma (2015), "Sentiment analysis: A review and comparative analysis of web services," Information Sciences, 311, pp. 18-38.

Machine Learning (ML)



Source: https://www.mactores.com/services/aws-big-data-machine-learning-cognitive-services/
FinTech

Financial Technology

Financial Technology FinTech

"providing financial services by making use of software and modern technology"

Financial

Services

Financial Services



Source: http://www.crackitt.com/7-reasons-why-your-fintech-startup-needs-visual-marketing/

Financial Revolution with Fintech

A financial services revolution

Consumer Trends



1. Simplification



2. Transparency





4. Reduced Friction

Source: http://www.hedgethink.com/fintech/european-fintech-top-100/

FinTech: Financial Services Innovation



Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

FinTech:

Financial Services Innovation

1. Payments 2. Insurance 3. Deposits & Lending 4. Capital Raising **5. Investment Management** 6. Market Provisioning

Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf



Source: https://www.stockfeel.com.tw/2015年世界經濟論壇一未來的金融服務/

FinTech: Financial Services Innovation

功能	創新項目
会 支付 Payments	無現金世界 (Cashless World) 新興支付 (Emerging Payment Rails)
今 保險 Insurance	價值鏈裂解 (Insurance Disaggregation) 保險串接裝置 (Connected Insurance)
● 存貸 ● Deposit & Lending	替代管道 (Alternative Lending) 通路偏好移轉 (Shifting Customer Preferences)
籌資 Capital Raising	群眾募資 (Crowdfunding)
投資管理 Investment Management	賦權投資者 (Empowered Investors) 流程外部化 (Process Externalisation)
前場資訊供應 Market Provisioning	機器革命 (Smarter, Faster Machines) 新興平台 (New Market Platforms)

圖表來源:Fugle團隊整理

FinTech: Payment



Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

FinTech: Payment Cashless World Emerging Payment Rails



圖表來源:Fugle團隊整理

FinTech: Insurance

2



Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

FinTech: Insurance Insurance Disaggregation Connected Insurance



圖表來源:Fugle團隊整理

Source: https://www.stockfeel.com.tw/2015年世界經濟論壇一未來的金融服務/

FinTech: Deposits & Lending



Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf



圖表來源:Fugle團隊整理

FinTech: Capital Raising





FinTech: Investment Management



5 FinTech: Investment Management Empowered Investors Process Externalization



圖表來源:Fugle團隊整理

FinTech: Market Provisioning



Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

6 FinTech: Market Provisioning Smarter, Faster Machines New Market Platforms



圖表來源:Fugle團隊整理

The Economics of Money, **Banking and Financial Markets**

Source: Frederic S. Mishkin (2015), The Economics of Money, Banking and Financial Markets, 11th Edition, Pearson

Frederic S. Mishkin (2015), The Economics of Money, Banking and Financial Markets, 11th Edition, Pearson



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Economics of Money, Banking and Financial Markets

- 1. Money, Banking, and Financial System
- 2. Financial Markets
- 3. Financial Institutions
- 4. Central Banking and the Conduct of Monetary Policy
- 5. International Finance and Monetary Policy
- 6. Monetary Theory
- 7. Financial Services Industry

Why Study Money, **Banking**, and Financial **Markets**?

Why Study Money, Banking, and Financial Markets?

- To examine how financial markets such as bond, stock and foreign exchange markets work
- To examine how financial institutions such as banks and insurance companies work
- To examine the role of money in the economy

Overview of the Financial System



Source: Frederic S. Mishkin (2015), The Economics of Money, Banking and Financial Markets, 11th Edition, Pearson

From Algorithmic Trading to Personal Finance Bots: **41 Startups Bringing** Al to Fintech

Source: https://www.cbinsights.com/blog/artificial-intelligence-fintech-market-map-company-list/

From Algorithmic Trading To Personal Finance Bots: 41 Startups Bringing AI To Fintech Al in Fintech

41 Startups Bringing Artificial Intelligence To Fintech



Artificial Intelligence (AI) in Fintech





Source: https://www.cbinsights.com/blog/artificial-intelligence-fintech-market-map-company-list/

Artificial Intelligence (AI) in Fintech



Source: https://www.cbinsights.com/blog/artificial-intelligence-fintech-market-map-company-list/



Wealthfront Robo Advisor





Financial

Services

Technology Innovation

Innovation

Source: https://www.merriam-webster.com/dictionary/innovation
Innovation: a new idea, method, or device

Innovation: something new

Source: https://www.merriam-webster.com/dictionary/innovation

Novelty: something new or unusual

the novelty of a self-driving car

Source: https://www.merriam-webster.com/dictionary/novelty

Creativity is not a new Idea. **Creativity is** an old belief you leave behind

FinTechs as Service Innovators: Analysing Components of Innovation



Source: Riikkinen, Mikko, Kaisa Still, Saila Saraniemi, and Katri Kallio. "FinTechs as service innovators: analysing components of innovation." In *ISPIM Innovation Symposium*, The International Society for Professional Innovation Management (ISPIM), 2016.

Innovation "a process of searching and recombining existing knowledge elements"

Source: Savino, Tommaso, Antonio Messeni Petruzzelli, and Vito Albino. "Search and recombination process to innovate: A review of the empirical evidence and a research agenda." International Journal of Management Reviews (2017).

Search and recombination process to innovate: A review of the empirical evidence and a research agenda



Source: Savino, Tommaso, Antonio Messeni Petruzzelli, and Vito Albino. "Search and recombination process to innovate: A review of the empirical evidence and a research agenda." International Journal of Management Reviews (2017).

Innovation Research Economics, Sociology and **Technology Management**

Source: Gopalakrishnan, Shanti, and Fariborz Damanpour. "A review of innovation research in economics, sociology and technology management." *Omega* 25, no. 1 (1997): 15-28.

Innovation Research in Economics, Sociology and Technology Management

	Stage of process	Level of study	Type of innovation
Économists	Generation Idea generation Project definition	Industry	Product and process Only technical Only radical
Technologists			
Contextual technologists	Generation Commercialization and marketing Diffusion	Innovation (in the industry context)	Product and process Only technical Radical and incremental
Organizational technologists	Generation Idea generation Problem solving adoption Adoption Initiation	Organizational Sub-system	Product and process Only technical Radical and incremental
Sociologists			
Variance sociologists	Adoption Initiation Implementation	Organization	Product and process Technical and administrative Radical and incremental
Process sociologists	Adoption Initiation Implementation	Innovation (at the organizational level)	Product and process Technical and administrative Radical and incremental

Source: Gopalakrishnan, Shanti, and Fariborz Damanpour.

"A review of innovation research in economics, sociology and technology management." Omega 25, no. 1 (1997): 15-28.

Business, Innovation, and Knowledge Ecosystems

Source: Valkokari, Katri. "Business, innovation, and knowledge ecosystems: how they differ and how to survive and thrive within them." *Technology Innovation Management Review* 5, no. 8 (2015).

Business, Innovation, and Knowledge Ecosystems



Source: Valkokari, Katri. "Business, innovation, and knowledge ecosystems: how they differ and how to survive and thrive within them." *Technology Innovation Management Review* 5, no. 8 (2015).

Innovation Ecosystems Characteristics

	Business Ecosystems	Innovation Ecosystems	Knowledge Ecosystems
Baseline of Ecosystem	Resource exploitation for customer value	Co-creation of innovation	Knowledge exploration
Relationships and Connectivity	Global business relationships both competitive and co- operative	Geographically clustered actors, different levels of collaboration and openness	Decentralized and disturbed knowledge nodes, synergies through knowledge exchange
Actors and Roles	Suppliers, customers, and focal companies as a core, other actors more loosely involved	Innovation policymakers, local intermediators, innovation brokers, and funding organizations	Research institutes, innovators, and technology entrepreneurs serve as knowledge nodes
Logic of Action	A main actor that operates as a platform sharing resources, assets, and benefits or aggregates other actors together in the networked business operations	Geographically proximate actors interacting around hubs facilitated by intermediating actors	A large number of actors that are grouped around knowledge exchange or a central non- proprietary resource for the benefit of all actors

Source: Valkokari, Katri. "Business, innovation, and knowledge ecosystems: how they differ and how to survive and thrive within them." *Technology Innovation Management Review* 5, no. 8 (2015).

Diffusion of Innovation Theory (DOI)

Source: Everett M. Rogers (2003), "Diffusion of Innovations", Free Press, 5th Edition

Innovation (Diffusion of Innovation)

- 1. Relative advantage
- 2. Compatibility
- 3. Complexity
- 4. Trialability
- 5. Observability

Diffusion of Innovation



Innovation Adoption Process



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Innovation Adoption Process



[&]quot;The innovation adoption process: A multidimensional approach." Journal of Management and Organization 22, no. 4 (2016): 476.

Innovation Adoption Process



"The innovation adoption process: A multidimensional approach." Journal of Management and Organization 22, no. 4 (2016): 476.



Source: Paolo Sironi (2016), "FinTech Innovation: From Robo-Advisors to Goal Based Investing and Gamification", Wiley. 91

Brett King (2014), Breaking Banks:

The Innovators, Rogues, and Strategists Rebooting Banking

Wiley



"In the next 10 years, we'll see more disruption and changes to the banking and financial industry than we've seen in the preceding 100 years." (Brett King, 2014)

Fintech: Financial Technology

Disrupting Banking: The Fintech Startups That Are Unbundling Wells Fargo, Citi and **Bank of America**

Source: https://www.cbinsights.com/blog/industry-market-map-landscape/

Fintech: Unbunding the Bank

Unbundling of a Bank



Source: https://www.cbinsights.com/blog/disrupting-banking-fintech-startups-2016/

Fintech: Unbunding the Bank Wealth Management: Wealthfront

Unbundling of a Bank



Fintech: Financial Technology Disrupting **European Banking: The FinTech Startups That Are Unbundling** HSBC, Santander, and **BNP**

Source: https://www.cbinsights.com/blog/industry-market-map-landscape/

Unbundling of a European Bank



Source: https://www.cbinsights.com/blog/disrupting-european-banking-fintech-startups/

Unbundling of a European Bank



Source: https://www.cbinsights.com/blog/disrupting-european-banking-fintech-startups/

Artificial Intelligence for

Conversational Robo-Advisor

Al Conversational Robo-Advisor



Portfolio Performance in 2016 Annual Portfolio Statistics

	Black-Litterman Portfolio - the LSTM Investor Views	Markowitz Portfolio	Equally Weighted Portfolio	S&P 500 Index
Annual return	16.151%	15.172%	12.428%	9.643%
Annual volatility	13.897%	14.365%	15.870%	13.169%
Sharpe ratio	1.14697	1.05534	0.81762	0.76492
Stability	0.82500	0.82515	0.82514	0.78754
Max drawdown	-10.105%	-10.465%	-12.529%	-10.306%
Skew	-0.35652	-0.52985	-0.56976	-0.36795
Kurtosis	2.49845	3.00613	2.41894	2.21958
Daily value at risk	-1.688%	-1.750%	-1.948%	-1.619%
Alpha	0.06445	0.05354	0.02158	0.00000
Beta	1.01485	1.04816	1.15631	1.00000
Information ratio	0.10935	0.09129	0.04655	_

Source: Min-Yuh Day, Tun-Kung Cheng and Jheng-Gang Li (2018), "AI Robo-Advisor with Big Data Analytics for Financial Services", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018.

Portfolio Cumulative Returns

Cumulative Returns: Portfolios



Source: Min-Yuh Day, Tun-Kung Cheng and Jheng-Gang Li (2018), "AI Robo-Advisor with Big Data Analytics for Financial Services", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018.

System Architecture of AI Conversational Robo-Advisor



Source: Min-Yuh Day, Jian-Ting Lin and Yuan-Chih Chen (2018), "Artificial Intelligence for Conversational Robo-Advisor", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018

Cumulative Returns Markowitz v.s. Black-litterment



Source: Min-Yuh Day, Jian-Ting Lin and Yuan-Chih Chen (2018), "Artificial Intelligence for Conversational Robo-Advisor", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018

Conversational Model (LINE, FB Messenger)

• 189	1865 	10:57 AM	23%	Aiwis	fin ■ 🥲 🏶 🗙
America	Hi there!	Pose Au Prove I want s stock	ome info about		hi how's going
ANERTH	ABOUT S	TOCK?	Research and		Hi there!
ANDIN	What you complicat	said was too ed for me.	commendations	AWISPIN	I am doing very well. How are you ?
		No.57 AM	ice 2330 TSMC		i need your help
	2330台積 市價:233. 買價:233. 賣價:233. 成交量:30 前日收盤(開盤:232. 最高:234. 買低:230.	電各項資訊如下 0 5 5,664 貫:229.5 5 0 5		AWISFIN 輸入部	Help is assistance I can give you.
+	0 🖂		© ₽	13	

Source: Min-Yuh Day, Jian-Ting Lin and Yuan-Chih Chen (2018), "Artificial Intelligence for Conversational Robo-Advisor", in Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2018), Barcelona, Spain, August 28-31, 2018

Conversational Robo-Advisor Multichannel UI/UX Robots







ZENBO



second or a

Al Chatbot for Conversational Commerce


IMTKU **Question Answering System** for **World History Exams** at NTCIR-13 QALab-3

NTCIR-13 Conference, December 5-8, 2017, Tokyo, Japan

Tamkang University







IMTKU Textual Entailment System for Recognizing Inference in Text at NTCIR-9 RITE

Department of Information Management Tamkang University, Taiwan



Min-Yuh Day Chun Tu myday@mail.tku.edu.tw

NTCIR-9 Workshop, December 6-9, 2011, Tokyo, Japan

Tamkang University







IMTKU Textual Entailment System for Recognizing Inference in Text at NTCIR-10 RITE-2

Department of Information Management Tamkang University, Taiwan



Min-Yuh Day



Chun Tu



Hou-Cheng Vong

myday@mail.tku.edu.tw



Shih-Wei Wu



Shih-Jhen Huang

NTCIR-10 Conference, June 18-21, 2013, Tokyo, Japan

IMTKU Textual Entailment System for Recognizing Inference in Text at NTCIR-11 RITE-VAL

Tamkang University



2014





Min-Yuh Day



Ya-Jung Wang



Che-Wei Hsu



En-Chun Tu



Huai-Wen Hsu



Yu-An Lin



Shang-Yu Wu



Yu-Hsuan Tai



Cheng-Chia Tsai

NTCIR-11 Conference, December 8-12, 2014, Tokyo, Japan

Tamkang University



2016 **IMTKU Question Answering System for** World History Exams at NTCIR-12 QA Lab2

Department of Information Management Tamkang University, Taiwan

Sagacity Technolog



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2017





IMTKU Question Answering System for World History Exams at NTCIR-13 QALab-3

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NTCIR-13 Conference, December 5-8, 2017, Tokyo, Japan

IMTKU System Architecture for NTCIR-13 QALab-3





NTCIR-13 Conference, December 5-8, 2017, Tokyo, Japan

System Architecture of

Intelligent Dialogue and Question Answering System



Summary

1. Al in FinTech

2. Financial Services

3. Innovation and Application







人工智慧金融服務創新應用 (AI for Financial Services Innovation and Application)

時間: 2019年4月19日(五)下午1:00-3:00

地點:聖約翰科技大學行政大樓 N409 周德新廳 (新北市淡水區淡金路四段499號) 主辦單位:聖約翰科技大學人文科技前瞻計畫學術講座



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