出國報告(出國類別:開會)

赴新加坡參加「2018 Big Data & AI Asia 國際研討會」

服務機關:科技部資訊處

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摘要

大數據及人工智慧為近來熱門之資訊議題,透過資訊技術及電腦運算能力的進展,逐漸廣為應用於政府及企業組織之業務運作,跳脫出舊有資料運用模式,以客觀數據輔助主觀評價,提供決策支援及應用於業務改造等,本次派員出席之「2018 Big Data & AI Asia 國際研討會」,邀請業界專家及企業主管進行大數據及人工智慧之專題講座及其應用於企業之實務案例分享,大部分議題不以資訊技術角度切入,而是以組織需求為導向,如大數據及人工智慧於應用於電力、物流、金融、運動產業及政府部門之導入經驗分享,另亦針對人工智慧與大數據應用帶來的工作機會消失(Job Killer)、個人資料保護(PDPC)、資料貨幣化(Data Monetization)等道德與法律層面進行探討。

本部近來發展以人工智慧技術輔助業務運作,且人工智慧及大數據亦為未來資訊 發展的趨勢,可藉此機會參採國外作法,持續精進本部資訊服務。

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一、目的

大數據與人工智慧這兩個一前一後出現在我們生活中的科技詞彙,看似大張旗鼓,但又有點無聲無息的逐漸影響我們的工作、生活、社交等各種領域,以資訊技術工作領域來說,初期對數據的應用,以關聯式資料庫技術處理,強調資料的結構化、正規化、完整性,著重處理結果的正確性,期間或可產生可供決策輔助的有用資訊,但仍著重於資料紀錄、保存及作業管理等,小至進銷存試算表、大至國際型的 ERP 系統皆然;後期隨著商業競爭增加,從收集到的資料中挖掘出有用的資訊以迅速反應市場變化頓成一門顯學,資料採礦(Data Mining)、資料倉儲(Data Warehousing)、專家系統(Expert System)是這個時期的產物,這時候主要仍然使用分類、分群、關聯等技術進行資料分析,這也是大數據應用即將爆炸性開展的前期;然後伴隨著資訊軟硬體技術的進步,更強的資訊硬體效能、分散式運算、網路雲端服務應用、智慧手機的普及等,海量般的使用者行為資料在網路上流動,在這個掌握了資料就掌握了先機的時代,不僅要剖析運用資料,還要能即時與使用者進行互動,進而先一步預測需求,於是人工智慧技術找到了他的施力點。

本部資訊化工作長久以來著力在傳統資訊服務應用領域,響應電子化政府趨勢,提供部內及部外使用者穩定可靠的資訊服務,對內協助本部業務推展,對外以網路取代馬路,提供民眾便利不受時空限制的資訊服務,然隨著科技進步,傳統資訊服務也應與時俱進,以嶄新的思維進行設計及規劃,應用大數據及人工智慧等技術,一方面探勘發掘組織現有資料,同時探索新的應用可能。

本次在新加坡舉辦的 2018 Big Data & AI Asia 國際研討會,探討及分享了許多國外企業組織等應用大數據及人工智慧的經驗與遭遇問題,值得觀摩學習,以期應用於本部的資訊工作推展。

二、過程

本次 2018 Big Data & AI Asia 國際研討會議於於新加坡新達城(Suntec City)的國際 會議及展覽中心(Suntec Singapore Convention & Exhibition Centre)舉辦,為期共 2 天(108年 12月 4日及 12月 5日),會議舉辦型式為以專題演講為主軸,上午場次大多為比較廣泛性的主題演講及綜合座談,下午場次則分為兩個支線,探討較深入的議題及案例分享,完整議程詳附錄,會場週邊則有大數據與人工智慧領域相關業界廠商進行參展,進行產品技術展示。

講演全程以英文發表,概分為企業使用大數據與人工智慧技術進行改造之過程與 經驗分享,或是大數據與人工智慧知識工作者就相關議題進行探討等兩大類型,場次 非常多內容也很豐富,以下就二個印象較深刻的主題進行報告。

(—) **Demystifying Big Data and AI.** -Steve Leonard, CEO SGInnovate

SGInnovate (新加坡創新機構)為新加坡政府資助創立,協助科技新創企業、人才、資金與市場的媒合,Steve Leonard 先生為該機構於 2016 年成立後第 1 任 CEO。

大數據通常被界定為數量龐大,個別看來用處不大,但聚集起來卻可能很有用途,故在設計大數據相關應用時,我們常常輕忽個別資料的精確度或偏差性,期待用大量資料來弭平個體差異造成的誤差,但有時要注意這樣的個體誤差是來自於統計上的合理變異,亦或是資料收集方法所造成的,Leonard 先生強調 G.I.G.O. (Garbage In Garbage Out)的觀念,如果在資料取得階段即發生錯誤,那不管後續的人工智慧模型或演算法再精良,亦無法產出正確的結果,隨著我們把愈來愈多的關鍵性任務交由 AI 去執行,部分甚或影響民眾生命財產,就更需重視資料正確性。

另外是有關 AI 人性化與道德層面的探討, Leonard 分為 6 個層面去探討:

1. Job creation VS Job destruction

AI 確實讓部分工作機會消失,但長遠看來,工作需求往更有創造性、認知性的方向移動,這改變不會在一夕之間,人們還是有時間去適應調整。

2. Education of AI

Leonard 先生指出人的能力水平除了天生差異外,大部分來自於其後天教育與知識水準,同樣的道理應用在 AI 上,AI 是靠著背後不間斷的大數據資料庫及機器學習運作,一樣會因為學習模型或演算法設計造成錯誤及偏差,故需要不斷檢討及修正。

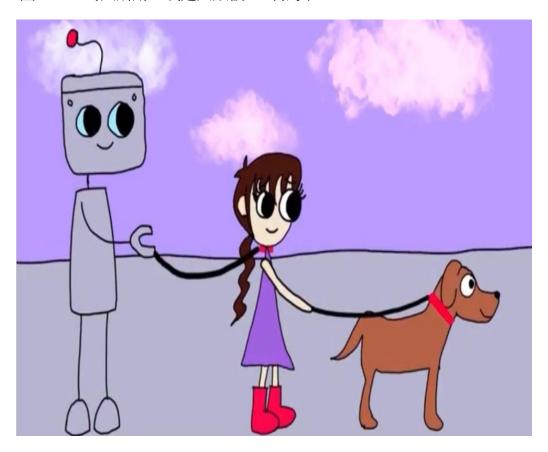
3. Being Human or Human Being?

科技始終來自人性是我們都耳熟能詳的廣告詞,但人性有善有惡,AI工具也有可能被用在錯誤的地方,就像科幻作家艾西莫夫(Isaac Asimov)提出的機器人三大法則,AI應該也要有其運作的基本法則,服務人類、防止偏見、保護隱私、公正透明...。

4. Machine decisions reversible by humans

人會犯錯,同樣的機器也會犯錯,設計 AI 服務時,也要考量當 AI 發生錯誤時的回復或補救機制,把最終的裁量權交還到人類的手上,Leonard 先生用了一張有趣的投影片來形容。

圖 1: AI 為人所用,或是人類被 AI 制約了?



5. Intended benefits and unintended consequences

這個主題我把他翻譯成 AI 的社會責任,在 AI 帶來更便利的生活、更有效率的產出的同時,我們也應著眼於如何用 AI 技術將人類社會活動所帶來的自然環境衝擊降到最低,如使用智慧節能科技、智慧物流系統(Intelligent Logistics)等減少能源的使用。

6. Truth and beauty of imperfect world

一個很抽象的概念,在設計 AI 系統時不應以完美及非黑即白的二分法為最高指導原則,而忽略了人類思考過程中的獨立性及變異性,這對我們這些習慣了 0 與 1 思維模式的資訊工作者來說,確實是個很容易陷入的迷思,換個角度來說,AI 是否適合執行需要深度人性化判斷思考的工作?

最後 Leonard 下的結語是:AI, tools to help humanity,這樣的觀念在整個研討會的 過程中不斷被提及,當我們對 AI 技術發展現況瞭解越深入,便越能感受 AI 是用來輔 助人類文明進步,而不是取代人類。

(二) World's first AI-Powered Sailing Chatbot on Facebook Messenger. -Deborah Kay,

Head of Digital Transformation, Singapore Sailing Federation

實現以機器智能化客服取代第 1 線客服工作,以撙節成本及提升服務能量, 一直是許多企業組織努力的目標,早期的電話語音客服系統某種程度來說算是機 器客服的濫觴,但還不具備有人工智能,充其量只是把電話當成使用者介面(UI) 的資訊系統,完全靠人給予指令進行互動,無法預測需求及給出建議。

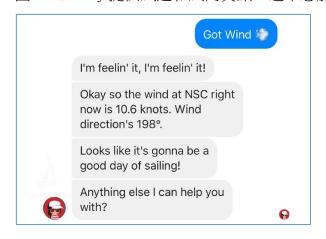
在智慧手機普及的今日,即時通訊軟體可說是殺手級的應用,迎合現代人忙碌的生活步調,即時傳遞、可群聊、可即時回應但也可有空再回、節省高額越洋通訊費用、可傳遞文字、語音、圖片、視訊...,太多的優勢讓人們越來越離不開他,把傳統電話客服移轉到即時通訊軟體看來是再自然不過的發展,本案例分享利用聊天機器人取代傳統的網站或電子郵件服務,協助新加坡當地青少年帆船賽事的進行,一起來看看 Sammy 有什麼特異功能。

Sammy 是新加坡帆船協會(Singapore Sailing Federation)所開發,基於 Facebook Messenger 即時通訊軟體的聊天機器人,她的主要任務是協助在青少年帆船賽事舉辦期間,提供青少年選手及其父母即時的賽事相關資訊,最主要是航海時所需要的風向、風速等資訊,其背後運作原理為與新加坡政府的開放資料集(Open Data Set) DATA.GOV.SG 連結,取得新加坡國家帆船中心的即時氣象讀數,這看似簡單的機制,獲得極大的成功,在事後的滿意度調查中,97%的受訪者表示希望能保留 Sammy 這個機制,淨推薦分數 (NPS, Net Promoter Score)也高達 89%,講座 Deborah 小姐分享了幾個成功的秘訣:

1. Have a Clear and Simple purpose.

Sammy 的主要任務很簡單 - 提供即時氣象讀數,讓其主要使用對象(青少年帆船選手)以有趣、互動的方式取得這些資訊,提高使用這些服務的動機,但系統設計上仍不能忘記其服務的本質,以一次做好一件事的精神,提供有用的資訊,打造成功的服務。這在一些較複雜的商業應用上不見得完全適用,但有時為了 100%完美解決所有的問題而開發出龐大複雜的系統,致曠日費時甚或難產,倒不如換個思維先提供可以解決 80%的主要問題的輕量服務,再漸次擴充,這讓我想到如果科技部要做一個回答研究人員有關申請獎補助業務相關問題的聊天機器人時,可以先專注在解答專題研究計畫相關的問題,因為這大概佔了我們 90%以上的服務能量,先專注並累積經驗,再漸次推廣到其他如國際合作、挺攬人才等複雜度高但案件量較少的業務。

圖 2: Sammy 提供風速和風向資訊,還不忘加油打氣一番!



2. Give your bot a personality.

就像我們在看小說時,會依據作者的文字描述心中自然想像書中主人翁的外貌、聲音、性格等等,賦予聊天機器人一個鮮明的外觀與個性也是成功的秘訣之一,畢竟聊天機器人的最高境界是能通過圖靈測試,讓人無法察覺交談對象是機器人,如果能先做好這聊天機器人的背景設定,取得好感,便已踏出成功的一步。Sammy被設定為一個18、9歲左右的小女孩,大頭貼也設計成喜歡帆船運動的陽光造型,此一設定迎合了主要服務對象的年齡層,Deborah 小姐特別強調幽默感也是聊天機器人很重要的設定,畢竟大多人都不喜歡跟無趣的人聊天吧!

圖 3:可愛且充滿陽光的 Sammy,注意帽子上的文字。



3. Train your bot for small talk and respond to Emojis and Stickers

這邊的 small talk 指的是一些日常生活的對話,前面講到聊天機器人是被設計處理一些特定目的問題,以 Sammy 來說他回應風力、風向的問題,但根據統計 60%的聊天機器人對話是一些無關緊要的文字、貼圖或表情符號等,這很符合人類對話習慣,但很多機器人無法回應這些簡單的"閒聊",例如今天天氣如何?妳叫什麼名字? 哈囉!…之類的問候語,這會讓聊天機器人的使用經驗不佳,開發者可使用一些現成人工智慧模組來解決這些一般性問題,不用重複開發,將資源投注在專屬領域。

4. Don't spam with broadcasts

聊天機器人常被用來當成行銷工具,他的開啟率和被點擊率都遠高於傳統 廣告電子郵件,有些聊天機器人會不定時發送一些廣告訊息或噓寒問暖一番, 但建議要提供可取消接收這些訊息的機制及智能判斷,畢免因過度的打擾招致 反效果。

圖 4:都說不要問了,聊天機器人還是不死心。

Do not ask



Ok, remember to message me the next time you eat or drink something

27 MAY, 9:01 AM

Healthy habits will help you get where you are going. Did you grab a light breakfast this morning?





5. Integrate with human takeover

就像電話語音客服機制,儘管考量再週到、服務再週全,仍會保留一條接 通人工客服的機制,聊天機器人也建議要有這樣的設計,當偵測到機器人無法 有效解決問題時,應當可自動或手動切換到真人處理。

6. Monitor for unspoken human behavior

除了利用聊天機器人提供資訊和回答問題外,也可以利用訊息文字雲分析可能的潛在需求,例如在實際分析 Sammy 的聊天訊息中,photos, results 和wind 等字的出現次數很高,代表除了選手和家長們想瞭解風的資訊外,也想知道成績和活動的照片花絮等資訊,此時可以適時推播這些資訊,增加服務滿意度。

圖 5:利用 Sammy 對話訊息產出的文字雲。

Word cloud of incoming messages to Sammy



7. Never stop training

人工智慧和人類的智能發展是一樣的,需要透過不斷的訓練和學習進行修 正,現階段人工智慧大多是為了特定目的設計好系統模型及使用型態,然後靠 大量的訓練資料及 AI 訓練人員進行測試修正,以實戰累積經驗和排除可能遇到的錯誤,並非一般人想的那麼簡單與自動化,還是存在許多人工和重複性的工作,而這樣的工作是持續性的,不因服務推出後而中斷,Deborah 小姐用了運動員常用來激勵自己的英文諺語:Champions train, losers complain.為人工智慧中訓練的重要性下了註腳。

三、心得與建議

本次研討會的主題雖然圍繞在大數據與人工智慧議題,但實際的講題很廣泛, 從大數據與人工智慧於商業活動的應用到對人類生活的影響,都有深入淺出的探 討,茲將本次心得與建議整理如下:

(一) 數據收集與清理的重要性

現階段人工智慧服務仰賴背後的大數據資料,在收集數據的過程中,需注意資料來源的合法性及進行去個人化(depersonalized)的處理,避免觸犯個人資料保護相關法規。

另外在資料取得的源頭,即預先考量日後大數據及人工智慧的應用,事先進行資料清洗(Data Cleaning),例如在利用以文找文功能來建立 AI 挑選學術審查人的機制時,如能在接收研究成果報告之初即進行語詞拆解、關聯/關鍵字分析等資料爬梳(Parsing)處理,可加快後續處理效能。

(二) 資料分享與開放

本次會議發現有許多公司的主要業務為收集、分析與販售數據,如 mobilewalla 這家公司專營在手機數據的收集與分析,透過自行研發的人工智慧分析工具, 提供企業客戶消費者行為數據與分析服務,這個概念轉換到政府機關的服務即 是開放資料(Open Data)的應用,由政府主動公開資料,民間發揮創意運用資料 創造出有助社會公益的服務,以本部來說目前提供了許多開放資料集,綜觀來 說多為結構化的業務資料,後續可以考量將本部收集到的非結構化文件資料, 如計畫申請書及計畫成果報告等經過資料清理與去識別化後以開放資料型式提供,或可有助於分析我國學術研究趨勢與發展重點。

(三) 站在巨人的肩膀

人工智慧和大數據技術發展如火如荼,市場上百家爭鳴,各種平台和開源套件讓開發人員眼花潦亂,甚或無所適從,例如單一個大數據的 NoSQL 的資料庫平台,市場上就有 Amazon DynamoDB, Apache Cassandra, MongoDB, Hadoop HBase...等數十種的選擇(http://nosql-database.org/),每種都有其特性及適用的場合,有時又要結合不同的產品,取長補短,對資訊系統開發人員來說是一大挑戰,雖然目前政府機關大多以委託專業廠商方式辦理資訊服務採購作業,但大數據和人工智慧相關應用在大部分政府機關還算是一個頗新的嘗試,在導入相關應用時應考量產品成熟度及後續維護,以前面介紹的 Sammy 聊天機器人來說,其應用即組合多種既有 AI 聊天機器人開發工具,如專門在 Facebook Messenger 開發 AI 聊天機器人的 Chatfuel 平台、Google 人機交談自然語言技術 Dialogflow、自然語意分析工具 Janis 等,站在這些巨人的肩膀上進行建置開發,可汲取社群的智慧經驗,獲得事半功倍的效果。

四、 附錄

(一) 會議議程

108年12月4日

	Conference Room1	Conference Room2	Tech Talk Stage
9:10 -9:40	KEYNOTE ADDRESS: AI		
	IN A SERVICES 4.0		
	WORLD		
	Jane Lim		
	Assistant Chief Executive		
	(Sectoral Transformation Group)		
	Infocomm Media Development		
	Authority		
9:40 – 10:10	DEMYSTIFYING BIG		
	DATA AND AI		
	Steve Leonard		
	CEO		
	SGInnovate		
10:10 – 10:40	NETWORKING COFFEE B	BREAK	
10:40 - 11:30	INDUSTRY LEADERS'		USING DATA
	ROUNDTABLE: HOW		SCIENCE FOR
	WILL BIG DATA AND AI		SOCIAL GOOD
	SHAPE UP IN 2019?		Hui Xiang Chua
	Devadas Krishnadas, CEO,		Owner/Resource
	Future-Moves Group		Developer
	Dr. Cao Hong, Head of Data		Data Double Confirm
	Science, Ernst & Young		
	Graham Brown, Show Host,		
	Chairman, Asia Tech Podcast		
	Johnson Poh, Head of Data		
	Science, DBS Bank		
	Sanjay Bakshi, Head of Digital		
	Transformation and Ventures,		
	Shell		
	Victor Tay, Managing Partner,		
	Stout (Asia) Advisory Limited		
	Vivek Kumar, Director, National		
	Trades Union Congress		
11:30 – 12:00	ALGORITHM VS. DATA:		HOW TO BUILD

EXECUTIVE MUST KNOW BEFORE USING AI Anindya Datta Founder, CEO, Chairman Mobilewalla 12:00 – 12:20 ADOPTION OF BIG DATA AND MACHINE LEARNING IN YOUR CORE BUSINESS PROCESSES Johnson Poh Head of Data Science DBS Bank 12:20 – 12:40 BRIDGING THE DIGITAL DIVIDE – WOULD AI KILL JOBS? Vivek Kumar Director National Trades Union Congress Vivek Kumar Director National Trades Union Congress SEAsia Pte Ltd 12:40 – 14:00 NETWORKING LUNCH NETWORKING LUNCH VARP 10, AN HORIZONTAL APPROACH FOR TIME SERIES DATA ANALYTICS Xavier Marin SenX 14:00 – 14:30 CASE STUDY: WHY DIGITALIZATION OF LOGISTICS IS GOOD NEWS FOR AI ANG COFFOUNDER AND Vargoczky Senior Vice President Agility Asia Pacific 14:30 – 15:00 SNOWFLAKE CLOUD AI HAS A BIG BOOSTING		WHAT EVERY		YOUR
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Agility Asia Pacific		Andy Vargoczky	Chief AI Officer	
		Senior Vice President	Taikang Group	
14:30 – 15:00 SNOWFLAKE CLOUD AI HAS A BIG BOOSTING		Agility Asia Pacific		
	14:30 – 15:00	SNOWFLAKE CLOUD	AI HAS A BIG	BOOSTING

ALL YOUR DATA, ALL YOUR USERS Alan Eldridge Director of Sales Engineering APAC Snowflake I5:00 – 15:30 CASE STUDY: BIG DATA IN HEALTHCARE Dr. Dirk De Korne Deputy Director, Medical Innovation Ac Care Transformation Care Transformation Care Transformation Care Transformation Chara NoParla Care Transformation Chara NoParla Care Transformation Chara IN HEALTHCA Care Transformation Chara Howard Chara Howard Chara Howard Co-Founder Al FOR Chara Casta Co-Founder C		DATA WAREHOUSE:	(DATA) PROBLEM	BUSINESS
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Alan Eldridge Director of Sales Engineering APAC Snowflake 15:00 – 15:30 NETWORKING COFFEE BREAK Information Builders SEAsia Pte Ltd Co-Founder BOTBOT AI STORY: MEASUREMENTS AND CASE STUDY: AI FUTURE FOR BANKING & CASE STUDY: AI CASE STUDY: A		, and the second	Regional Director	
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15:00 - 15:30				
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J. Walter Thompson Worldwide Telecommunications Rajah & Tann Singapore SOLUTIONS		Riku Vassinen	Head, Technology,	LEARNING
Rajah & Tann Singapore SOLUTIONS		Head of Digital	Media &	APPROACH TO
		J. Walter Thompson Worldwide	Telecommunications	BETTER LEGAL
LLP Ivan Rawtaer			Rajah & Tann Singapore	SOLUTIONS
			LLP	Ivan Rawtaer

	Co-Founder
	PACTLY

108年12月5日

	Conference Room1	Conference Room2	Tech Talk Stage
9:10	MONETIZING YOUR		
-9:40	DATA AND		
	INFORMATION		
	THROUGH AI		
	TECHNOLOGIES		
	Damien Kopp		
	Advisory Board Member,		
	Co-Founder & CTO		
	Live With AI Foundation,		
	Envolve Data		
9:40 -	INDUSTRY		
10:10	LEADERS'		
	ROUNDTABLE:		
	EVOLVING		
	BUSINESS MODELS		
	AGAINST THE		
	BACKDROP OF		
	DISRUPTIVE		
	TECHNOLOGIES		
	Alban Villani, Managing		
	Director, Criteo Southeast		
	Asia, Hong Kong And		
	Taiwan		
	Dr. Keeratpal Singh, Chief		
	Data Scientist, Axiata		
	Graham Brown, Show Host,		
	Chairman, Asia Tech		
	Podcast		
	James Ong, Chief		
	Investment Officer, YCH		
	Group		
	Sanjay Bakshi, Head of		
	Digital Transformation and		
	Ventures, Shell		

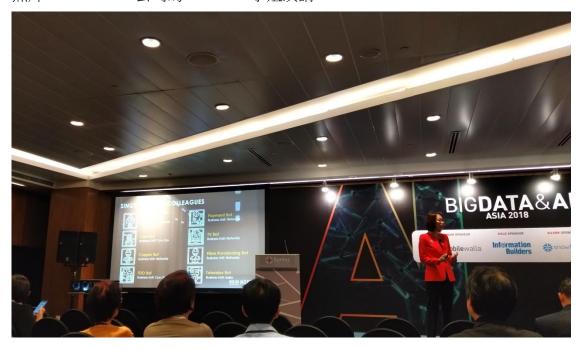
10:10 -	NETWORKING COFFE	E BREAK	
10:40			
10:40 -	CASE STUDY:		MOBILE DATA
11:30	BEYOND THE		INSIGHTS FOR
	TRADITIONAL		ENTERPRISES
	BUSINESS -		Soumita Roy Choudhury
	DIGITALIZATION		VP of Sales, APAC
	THROUGH		MOBILEWALLA
	CHEMICAL		
	DISTRIBUTION		
	Wong Mei Lin		
	Regional Managing Director		
	DigiB		
11:30 -	CASE STUDY:		A.I, VISUAL AND
12:00	OPTIMISING YOUR		CHAT - HOW TO WIN
	RIDE EXPERIENCE		THE WAR IN MOBILE
	USING BIG DATA		FIRST MARKETS
	AND AI		Khang Toh,
	Serene Ow		СТО,
	Data Science Lead		AIQ
	Grab		
12:00 -	BLOCKCHAIN: THE		Engineering APAC
12:30	CATALYST FOR		Snowflake
	SINGAPORE'S		
	SMART CITY VISION		
	Prakash Somosundram		
	Head of Acceleration		
	XSQ Global		
12:30 -	NETWORKING LUNCE	H	AI FOR THE MASSES:
14:00			HOW
			DECENTRALIZATION
			WILL ALLOW
			EVERYONE TO
			PARTICIPATE IN THE
			NEW AI ECONOMY
			Scott Jones
			Managing Director
			SINGULARITYNET
14:00 -	MASTERING THE	RIDING ON THE	CREATING WITH AI

14:20	ART OF DATA	NEXT WAVE OF	Will Handschell
14.20		DIGITAL	
	SCIENCE THROUGH		CEO
	ANALYTICS	TRANSFORMATION	PENCIL
	INTEGRATION,	WITH AI	
	DESIGN THINKING	Andrew Milroy	
	AND BEHAVIORAL	Head of Consulting, APAC	
	INSIGHTS	OVUM	
	Dr. Keeratpal Singh		
	Chief Data Scientist		
	Axiata		
14:20 –	GETTING THE	CASE STUDY: AI &	AI IN WEALTH
14:40	RIGHT BALANCE	ANALYTICS FROM	MANAGEMENT
	BETWEEN DATA	AN INSURANCE	Asheesh Chanda
	MONETIZATION	PERSPECTIVE	Founder & CEO,
	AND ACCEPTABLE	Dr. Vishnuteja Nanduri	KRISTAL.AI
	USE OF DATA	Head of Data Analytics,	
	Ram Kumar	India, Japan, Korea, and	
	Executive Head	Southeast Asia	
	Quantium India	Munich RE	
15:00 -	CASE STUDY: BIG	PANEL	TRAKOMATIC
15:20	DATA IN ENERGY	DISCUSSION:	Aroon Grover
	AND UTILITIES	MAXIMIZING THE	Data Analyst
	Nirupam S.D	ROLE OF HUMANS	TRAKOMATIC
	Senior Scientist, IoT and	IN AN AI WORLD	
	Artificial Intelligence	Dr. Lim Wee Kiat, Senior	
	Energy Research Institute @	Research Fellow, Nanyang	
	NTU	Business School, Nanyang	
		Technological University	
		Eleonore Ferreyrol, Board	
		member, Live With AI	
		Pierre Robinet , Senior	
		Consulting Partner, Ogilvy	
		Consulting	
15:20 -	NETWORKING COFFE	-	MAKING
15:50			WHITE-COLLAR
10.00			WORK SMARTER
			WITH A.I.
			SOFTWARE ROBOTS
			Christopher Lim
			Cilisophel Lilli

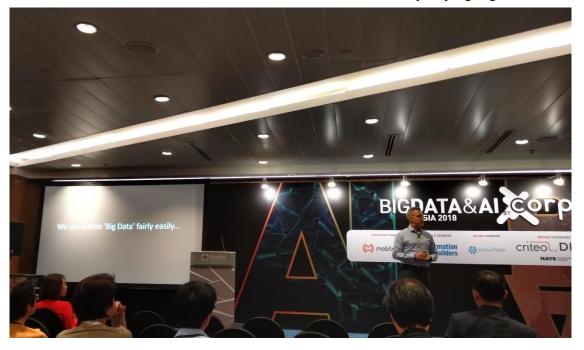
			CEO
			GLEE TREES
15:50 –	MACHINE	PANASONIC'S	OPTIMISING
16:10	LEARNING FOR	CASE STUDY: AI	SEARCH AND
	MANUFACTURING	ADVANCEMENT IN	DISCOVERY WITH AI
	SECTOR AND	SURVEILLANCE,	AND DATA
	BEYOND	AUTOMOTIVE AND	Anmol Aurora
	Gaurav Sharma	FACTORY	Business Head APAC and
	Procurement Manager and	Shen Shengmei	MENA
	Data Scientist	General Manager	VISENZE
	Apollo Tyres	Panasonic R&D Center,	
		Singapore	
16:10 -	CASE STUDY:	CASE STUDY:	
16:30	COLLECTION AND	WORLD'S FIRST	
	APPLICATION OF	AI-POWERED	
	DATA WITH GPS IN	SAILING CHATBOT	
	FOOTBALL	ON FACEBOOK	
	Vincent Yeo	MESSENGER	
	Sports Scientist (APAC)	Deborah Kay	
	Catapult Sports	Head of Digital	
		Transformation	
		Singapore Sailing	
		Federation	
16:30 –		CASE STUDY: AI	
17:00		FOR SMART CITIES	
		Wu Binwei	
		Head of Digital	
		Development, Asia	
		DNV GL	

(二) 照片花絮

照片 1: Infocomm 公司的 Jane Lim 小姐演講: AI IN A SERVICES 4.0 WORLD



照片 2: SGInnovate 的 CEO Steve Leonard 先生演講: Demystifying big data and AI



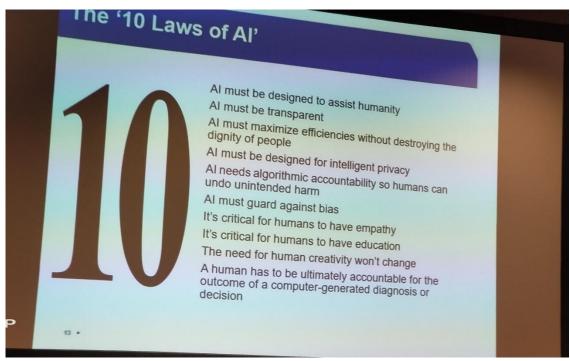
照片 3: 現場展覽攤位,SNOWFLAKE 公司正在介紹其即時雲端資料分析工具。



照片 4:圓桌座談時間:How will big data and AI shape up in 2019?



照片 5: Quantium India 公司的 Ram Kumar 先生在 Getting the right balance between data monetization and acceptable use of data 演講簡報中的 AI 10 法則



照片 6: Suntec Singapore Convention & Exhibition Centre 會議中心(圖左)外街景

