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09 2023
September

科技管理學院
College of Technology Management

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院長的話

新學期新展望

作者：張芳薰 經濟系

新學期的來臨，科管院將再次迎接了全新的學生，也將再次送別一批學生。自 2019 年 8 月上任至今，林哲群院長經歷了疫情的風暴，卻在之中看見了教學新轉機；見證了業師計畫，並持續嘗試讓產學無間隔；最後也將探討學生們能以什麼方式發揮永續發展精神。

提升能力 培養心態

「第一件事，就是恭賀這些學生。進入科管院也許就是部分同學的理想，也有些同學可能尚未確定自己的目標，但這也沒關係。」林院長表示，只要抱持著探索的心、開放的心去享受在科管院學習的時光，就能過個十分充實的大學生活。「無論是直接考上、轉校或轉系生，剛進科管院，難免會有銜接上的問題。然而，恐慌是不必要的，畢竟你會面對的問題，學長姐、其他同學也必定已經或將會碰見。最重要的就是累積經驗。」

談到科管院的新生，林院長強調學生們應把握機會多多體驗、琢磨以下五件事，以利有效充實、提升自己的大學生活：

1. 出國交換：擴大自己的視野；培養全球化的思想模式。在大學期間出國交換，不但能擁有不同的體驗，還能幫助自己快速成長。

2. 產學合作：大學課程難免較偏向學術性的知識提升，林院長鼓勵學生們趁寒、暑假之餘多多參與各式實習機會得以提升自己的各樣的技能、培養不同的心態。除此之外，還更可以提早開始與社會互動、交流。

3. 語言能力：英文是每位同學在全球化中必備的技能，未來也能在職場上有極大幫助。林院長提醒學生們可以嘗試修習 EMI 課程、參與其所辦的活動。

4. 規劃生活：大學仍然對於犯錯十分寬恕的地方，因此學生們更應該勇於嘗試各式各樣不同的事務而不畏懼新體驗。

5. 多聽演講：在演講中的一到二個小時，講者就將一生經驗、精華交與聽眾們。短暫的時間內，就可能大大改變自己的人生觀及價值觀。

態度轉變 學習不變

對於將要畢業，無論是馬上要步入職場或是選擇繼續研讀碩士的同學們，林院長認為態度上的轉變是最重要的一環。

「到了職場，你的態度需要更積極。要展現你對工作的熱誠、人與人之間的互動也需調適，不能過於自負。面對不同背景、不同能力的人更應多看多學習。」林院長也表示相較於薪資，興趣與動機更為選擇工作上的重點，他說：「剛開始，公司請你做的事，只要是在合理範圍，就該嘗試去做。抱持著 "I can do it!" 的心態去做中學。」

相同的，上了研究所也會需要有態度上的轉變，林院長認為研究生更應該毫無保留的投入，全力以赴。在學業之外，也應與業界保持互動、參與各式樣的座談會及演講來或與不同的知識。

林院長也再次強調學習的重要性，即便是離開校園，學習及探索也不應該停斷，更應抱持勇於嘗試的心，繼續追逐自己的夢，並提醒學生們：「機會是自己創造出來的！」

疫情帶轉機 教學新模式

2020 年 1 月至 2023 年初，全台學校受疫情影響，無法完全進行實體上課。然而危機之中伴著轉機，無論是教學方式、地點或是內容都隨著線上教學的盛行進行改變。過去的線上教育拘限於單方面的知識傳輸，如今師生以可以透過網路授教及對話，有如傳統教室中的教學。

除此之外，林院長認為線上教育更可使學習無國界，他說：「隨著需求上升，線上教育相關的技術也會跟著提升，如此我們就會有機會，不僅從自己學校，更可以從各國大學獲得更多知識的傳遞。」

至於如今處在的後疫情時代，針對實體教學與線上教學之間的糾紛，林院長表示，與其回歸純實體教學，不如兩者合施，屬行教學多元化。「未來的教育應開放讓老師教學中某部分可以使用線上上課，隨著這些改變，我們也許能獲得不同的教學結果。也讓老師們能在之中想出創新的教學方式，讓學生們不再侷限於傳統的框架。」而科管院的教室在翻新當中也有配合未來線上教學所架設的新設備供各課所需使用。

企業導師領航計畫 產學間隔再縮小

從 2020 年開始的業師領航計畫，至今已順利舉行三屆並即將開始第四屆，勵志於縮小產學間的隔閡。在一位業師對 3 至 4 位學生的狀態下，此計畫對於尚未完全確定自己未來方向，但開始有些頭緒的同學

們為完美的契機。在校友的幫助之下讓同學去探索各個職業類別的內容，甚至當有業師舉行大型活動時可讓所有計畫中的學生都參與，進行更大規模的跨域學習。

而林院長認為科管院做此計畫最不特別的地方為為了鼓勵同學進行不一樣的學習；並讓自己培養國際化的視野，此業師計畫也提供表現優良且申請交換的學生些經費上的補助，更加勉勵學生去嘗試各種不同的體驗，藉此培養更特殊、多方面的人才。

林院長雖將面臨任期的尾聲，但依然科管院能做的、能推行的計畫依然眾多，其一想法為寒暑假期間的海外實習，他說：「若能協助學生在台灣、海外實習，讓他們在產與學之間更能無縫接軌，那會是最好的。」

永續議題 自身做起

全球目前最在乎、最重要的議題之一不外乎為永續發展。林院長表示，在聯合國的SDGs中，最大的問題必為貧窮、災荒、

水資源等問題，然而這些並非學生們在目前階段能解決的。反而我們實際能做的是去體會、去了解，並在此階段較能改變的，如性別平等、優質教育等去實際付出努力。林院長鼓勵各位同學可以透過學校社團、服務學習或其他管道去落實這些理想，無論是去偏鄉教導孩子、去淨灘或甚至只是改變自身原有習慣而去珍惜、不濫用資源，他說：「取得相關知識不難，但是要從生活中去體驗一下、去參與、去學習，這才是最主要的。」

科管院今年進行了許多教室的改造、翻新，林院長提醒各位學生對於給予科管院繁多的幫助的校友、企業、朋友們抱持顆感恩的心，並也希望學生們好好珍惜且維護這個環境，讓未來學弟妹也能一直的使用下去。
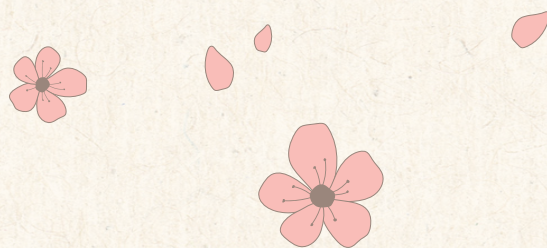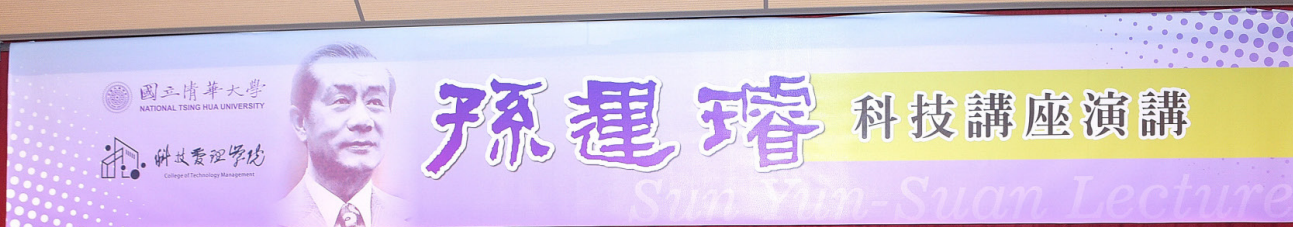
企業 ESG

An operational and strategic approach

講者｜苗豐強 聯華神通集團董事長

作者：王芊云 中文系

> 編按：科管院近期舉辦的「2023 孫運璿科技講座」，吸引眾多聽眾參與。本院為了讓師生有機會掌握各場次知名講者的精彩內容，特別將演講整理為文字，以下是實習記者王芊云整理的演講重點。

苗董事長現為聯華神通集團董事長，兼任中華民國全國工業總會理事長，他對於企業如何推動 ESG（環境、社會和公司治理）工作等有深入且完整的見解與實踐。苗董事長在演講時，大方分享他對於相關領域的發展經驗，並分享過去業界及聯華神通集團施行的方法，像是著重於綠色和智慧製造的發展，以及利用網路型組織作為工具，運用在其行銷通路上。

1953 年，聯華神通集團總部正式開幕，當時集團發展以麵粉為主的民生事業，後來逐漸推廣到義大利麵、餐飲、零售通路和租賃事業等多元版圖。經過 70 年經營，到了 2023 年，總部大樓實施植栽綠化、節能減碳等維護方案，充分考慮到永續經營的重要性，因此聯華集團總部重建時，就通盤以永續、綠能概念設計，斥資新台幣 17.8 億元，打造一棟「生態、節能、減廢、健康的建築物」，這棟總部大樓落成後，果然也榮獲台北市零碳獎狀等殊榮。

除了總部的綠建築設計之外，聯華富岡廠區積極運用倉儲建物屋頂進行太陽能發電，以實現綠能發電目標。這種創新應

用不僅為企業帶來經濟效益，同時也減少依賴傳統能源，貢獻於環境保護和永續發展。在企業經營過程中，不僅要關注當前環境和社會趨勢，還需要預測未來方向。眾所皆知，溫室氣體排放問題已成為全球關注的焦點之一，聯華神通集團因此除了致力於創造良好的工作環境，提供照顧員工與兼顧環保的職場環境之外，也積極創新，以提高工作效率和員工滿意度。

在企業實踐 ESG（環境、社會和公司治理）的過程中，如何制定完整且有效的策略至關重要，其中，市場調查扮演著重要角色，它能夠幫助企業了解市場最新、最真實的需求，並根據調查結果調整產品或服務組合，以滿足市場期望。舉例來說，聯華進行市場調查，以瞭解空氣中氮氣、氧氣含量的比例需求，與市場需求相等的氮氧含量比例，並依其比例改變其產品或服務的特性，以適應市場的需求變化。

在聯華神通集團的企業 ESG 策略下，透過創新應用和技術的引進，聯華神通集團在多個領域實現環境友好和低碳目標：首先，聯華神通集團在空氣分離廠的冷能利用方面取得了顯著成果。透過引入先進的冷能利用技術，冷能利用率達到 2.0，比傳統空氣分離廠節省電力 42%。這項措施使得兩個空氣分離廠一年省下近 1 億度電，大大降低能源消耗和溫室氣體排放；接著，在化學科技產業方面，聯華神通集團致力於開發環境友善的環保低碳可塑劑，並建立綠色供應鏈。這項努力有助於降低化學產品對環境的影響，同時推動可持續發展；最後，聯華神通集團的物流服務事業也積極推動環保和節能措施。他們提供最即時的倉儲運輸服務，並回收馬來酐製程的餘熱，轉換為蒸汽和發電，以實現減碳效果，減少碳排放量。除此之外，以及以網絡組織作為工具，運用在其五大領域：民生產業、系統整合與行動服務、電子化學產業、資訊產業和行銷通路。

在苗董事長分享的例子中，可將其 ESG 等策略相對應歸納至：經濟發展與環境永續、綠色和智能發展、網絡組織等相關有利於企業發長的工具中。經濟發展與環境永續：企業應該將經濟發展與環境永續視為密不可分的關係。透過運用政治、經濟、社會和技術和優勢、劣勢、機會和威脅等分析工具，可以評估企業在環境方面的優勢和挑戰，並制定相應的策略；綠色和智能發展：企業應該致力於推動綠色環保和智能技術的發展。這包括減少碳排放、提高能源效率、推動循環經濟和可再生能源的應用，以及整合智能科技和數據分析等先進技術，以提高生產力和效益；網絡組織：建立以網絡組織為基礎的產業生態系統，可以促進跨界合作和資源共享。透過建立合作夥伴關係，共同解決難題，推動創新和可持續發展。企業的 ESG 實踐需要將趨勢、創新和應用相結合，企業才能在不斷變化的環境中持續繁榮，同時對社會和環境產生積極的影響。

徐茉莉老師專訪

作者：周蜜 科管學士 2023 畢業

Q. 可以請教授說明一下自己的學術專業嗎？

徐茉莉教授（以下簡稱答）：好，這個問題其實很有趣，因為這項專業的名字一直在改變。我以統計學拿到博士學位，可是後來情況不一樣了，如果你現在問我的專業是什麼，我才不會說是統計學，現在有些人會稱它是「資料科學」。我也會做一些機器學習的事情，這算是結合統計學和機器學習，所以現在大家會稱它是資料科學。

Q. 我注意到您曾經獲頒很多獎項，清華大學科技管理學院（CTM）辦公室外面有一個看板，上面有很多海報都印有您的名字。這些獎項是關於什麼事蹟？

這個嘛，我覺得科管院很擅長創造出很厲害的獎項，而且把這些獎項擺出來讓大家看到。科管院會設立獎項以表彰各種不同的重要作為，反映出我們認為重要的事情。比如我們設有研究獎項，可以讓更多人瞭解這裡進行的研究工作，鼓勵更多教職員工。我們也設立了教學獎，因為教學是一件非常重要的事情，並不是每個學校都重視教學；科管院很努力提高教學水準，尤其是英語教學方面。

此外，學校還有導師獎，這些獎項既有趣

本期科管院電子報我們特別專訪服務科學研究所清華講座教授徐茉莉 (Galit Shmueli) 教授，徐教授專長領域為商業分析、大數據、線上市場及統計與資料探勘方法。就讓我們透過以下的專訪，深入認識來自以色列的徐教授。

又多樣，每位教師的指導方式各不相同，有些老師帶的博士生比較多，有些指導碩士生人數比較多，有些則是帶比較多的大學部學生。另外，指導資淺教師也很重要，不過這部分就沒有獎項了。這些獎項反映本校重視的價值觀。至於我會參與這些獎項的原因，我在這裡已經待了九年，非常關心和熱愛這裡。同事、學院、我們的學生，整個環境真的很棒。

Q. 您說您學的是資料科學。您為什麼要學這門學問？

這應該是機緣巧合。我從來沒想過自己要做什麼。我在高中時擅長做很多不同的事情，所以沒有偏好要做什麼。高中時，我喜歡很多科目。我記得我學過數學、歷史、另一種語言，還有高級英語（我的母語是英語）。我的興趣非常多樣化。

我在以色列長大，高中畢業後，我們在以色列要當兵兩年，這點跟台灣學生直接唸大學很不一樣。之後我得決定大學主修科目，但是我仍不知道自己想學什麼，尤其是大學的知識體系跟我們在高中所學的並不一樣。後來我選了心理學和統計學雙主修學士學位，當時我甚至對什麼是心理學和統計學都不清楚，高中沒有這兩個科目。

我又怎麼會進入資料科學領域呢？有一個心理學家跟我說：「心理學很不錯，但是

大多數心理學家都不擅長統計學。要是我想學習心理學，也應該學習統計學。」我很喜歡數學，因此決定試試看。就這樣，我開始學習這些科目。

當我拿到學士學位，必須決定下一步要做什麼的時候，我在心理學和統計學之間糾結了很久。我毫無頭緒，這個決定非常艱難。我甚至嘗試過諮詢專家，不過都於事無補。最後我問自己更喜歡做哪一邊的作業？我是更喜歡心理學的個案和作業，或是更喜歡統計？我發現自己更喜歡統計學，所以最後我選擇攻讀統計碩士。

接著，我選擇繼續唸博士，因為拿到碩士學位後，好的統計工作機會並不多。那時候還沒有資料科學，當時也還不是大數據時代，統計專業能從事的工作並不吸引人。

Q. 您在自己的教學方法裡，也加入了一些真正的經驗方法給學生嗎？

一點都沒錯。尤其我們是在商學院。我在教資料探勘、預測或視覺化的課程時，都會加入真實數據。我也跟企業合作，讓學生組隊參與實際的案件。這樣（和探討教科書）會差很多，這不只是我知道答案而學生不知道答案的問題。我不會這麼做。相反的，我們跟企業合作、瞭解他們的問題、分析他們的資料，提出他們可能沒想過的創新解方，然後我們試著解決這些問

題。等到學期結束，每個人都參與過一個案子之後，儘管過程中有遇到許多挑戰，成果仍然是很豐碩的。這種學習體驗確實非常迷人。

Q. 所以您還得接洽企業。企業願意跟您合作嗎？

這其實不太好辦，我剛來台灣時一個人都不認識，所以這並不容易。幸好坐在走廊另一頭的優秀同事 Somya Ray 教授已經跟企業合作了多年；另一位清華大學服務科學研究所（ISS）的同事，也就是創辦我們研究所的林福仁教授，也有與企業合作的經驗。他們都把我介紹給台灣的企業和組織。

通常我合作的對象都不是大公司。它們通常是規模較小的新創公司，沒有資料科學方面的資源，有時甚至沒有完整的資料庫。不過，他們非常熱衷於合作和探索商業資料的潛在用途。長期下來，我們建立了許多種關係，現在本院校友裡有很多曾經是我當年教過的學生，他們現在都在各家公司裡服務。他們十分想要與母校合作，因為他們知道合作能為公司帶來好處。這些產學合作能夠同時嘉惠學生、企業和校友。公司常會招聘實習生和新員工，而產學合作創造出一個對所有人都有利的完美生態系。每個人都從中體悟到學習、經驗和個人參與的價值。

Q. 為了將寶貴的見解提供給公司，您也必須跟上資料科學領域的最新動態？

沒錯。你這個問題很有意思。我是不是要確保自己掌握最新的深度學習技術，還有 ChatGPT 正在使用的強化學習的技術細節？這就是電腦科學或工程學院教學方法
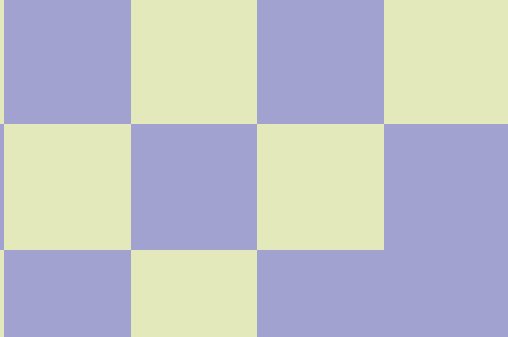
一個有趣的區別，他們會試著追求真正最新的科技解方。相較之下，我採用的是商業分析方法。資料科學彙集多個領域，這取決於誰使用這項技術及用途。它裡面結合了很多東西：統計學、電腦科學、工程學…很多層面，但這（如何使用這些技術）取決於你的背景。我們有商學院背景，這正是商業分析可以派上用場的地方。

在進行商業分析時，必須正確判定商業問題，並且將它變成合適的分析問題。這個部分最難。舉例來說，如果你想要給客戶更好的服務，也許這就是你自己在業務上的問題，不過，現在要怎麼把它變成某種機器學習的任務呢？這（做法）一點都不明顯。把問題拆成演算法層面的問題很不容易，而這正是商業分析所面臨的挑戰。我們教學生要清楚瞭解問題，而不是把他們培養成編寫解法的工程師。我們真正要做的是瞭解眼下有哪些辦法可以用，並且從中選擇合適方法。很多時候，經典的機器學習方法和統計模型其實非常好、非常強大。或許它們不是最準確的，但它們已經夠準確，而且更容易解釋。為了釐清這些方法，必須知道這些經典模型與最新、最先進的機器學習模型有哪些不同之處。你想瞭解基礎知識，但我不認為你必須追隨業界最新的調整。這就是學術界在某些領域會遇到大麻煩，但商學院不會的原因，因為你沒辦法用更快的演算法來打敗我們。這不是我們的工作。我們所想的是要怎麼把分析融入決策系統。

Q. 您很喜歡做研究，也有一份工作可以讓您完全投入研究，但為什麼要擔任教職呢？

我是這樣發現自己喜歡教書的。我唸的是三年制的大學學制，第三年跟一般情況不太一樣，我當了助教。我之所以當助教，是因為當時我唸的統計學系沒有通常擔任助教的研究生，但他們需要有人來教概率之類的課程。我的表現還不錯，系上給我一個當助教的機會。我說，好吧（這也是我付學費的好辦法！）。

當助教的第一年非常可怕。我每週都要幫學弟妹們複習。每週一次，我必須在一班約 30 名學生的面前，在黑板上解決問題，幫助他們解答疑問。而且我自己還是一個大學生，對吧？我記得有一天，我甚至把筆記忘在家裡，外面又塞車塞得很嚴重，我根本沒辦法回家拿筆記。直到今天，我還記得當時的題目是什麼，因為實在是太可怕了。那是多項式分布的題目。那次經歷讓我壓力超大，不過我也對結果非常滿意。我突然理解到，能夠幫助別人理解非常困難的東西時，那是非常棒的事情。這就是我第一次教學的心得。後來我在唸碩士和博士時又有教書。以色列對研究生任教是有立下規矩的。因此我在唸碩士和博士時一直都有當助教。最後，我還當了一門課程的講師，我非常喜歡這樣的事情。我覺得自己當時教得很不錯，我喜歡解釋這些複雜的東西。我現在當上教授，重視

並喜歡兩件事：一是研究，當然，我總是說，他們付錢給你，讓你去思考你有興趣的事情。這是一份非常好的工作。還能跟學生互動往來。這不是一件容易的事，沒有一件事是容易的，但是你可以學到很多東西。你真的會從中學到很多。

我的學生來自不同國家，他們非常不同。而且從以前到現在，學生也變得很不一樣。

我喜歡多年前教過的學生，我跟其中一些人到現在還是很好的朋友。因此，這也是一件非常寶貴的事情。

Q. 學生在哪些方面不一樣？

喔，在很多方面都不一樣。我的博士學位來自工程學院，我的學生都是工程師。他們跟商學院學生相比，心態很不一樣。你教工程師數學或機率，他們會接受並學會它。若是在商學院嘗試這樣的教學方式，至少在台灣以外的地方，研究生真的會質問你，他們會問：為什麼我要學這個？為什麼這很重要？你必須學著激勵他們去學會這些。

而且每個國家也不一樣，例如，我發現美國和印度的學生都非常獨立。他們喜歡單獨行動。台灣的學生則是很會分工合作，至少我教的學生是這樣。把學生分成不同小組，確實表現很好。所以我覺得在台灣

用小組合作的方式，可以發揮非常強大的力量。

台灣學生還有另一個與眾不同的地方，就是學生上課時勇於回答問題、敢於質疑，而不是不敢開口的程度。我搬到台灣時，這個差異逼著我改變許多教學方式。因為台灣學生不會提問，也害怕回答問題。我不得不改變上課方式，讓學生們放心更主動一點。我認為在學期剛開始的時候，他們不敢這麼做。不過在整個學期裡，事情也漸漸變化。學生們更樂於提問，更樂於表現自己的弱點，明白這麼做不會出錯，也更樂於相互交流。我還注意到，大家的互動也變得更密集，並且理解如果不這樣做，就什麼事都做不成。

我還觀察到，學生們身上的壓力好像比以前更大。台灣的新冠疫情不如其他國家嚴重，其他國家有很長一段時間在封城。台灣的疫情並不嚴重，但即使如此，我還是能明顯感覺到現在的學生，不管是否因為新冠疫情，都顯得身上的壓力超大。前幾年，甚至在新冠疫情爆發前，壓力一直在增加。我不確定他們身上出了什麼事，但這絕對不利於學習過程。我認為我們應該對此做些什麼。

Q. 是因為找工作或是實習？

也許壓力是來自於找工作和實習機會的競爭。以前的學生也要找工作和實習，不過

現在的競爭可能更激烈，尤其是新冠疫情等問題造成市場疲弱不振。這無疑增加了很多壓力。而且，我真的認為社群媒體對我們沒有任何好處。

我們會不會回過頭來捫心自問：「我昨天為什麼沒有多花十小時來狂刷社群媒體？」我想沒有人會這麼說，對吧？我覺得社群媒體是一個很嚴重的問題。這是多年來發生的變化，現在變得更誇張了。

人們睡不好、吃不下。他們一直擔心自己在做什麼、在說什麼，以及別人在講些什麼。這些情況都會帶給人無比壓力。我想你們這一代人正在想辦法解決這件事，有些人會說「夠了，這太誇張了！」我們都受到了巨大的衝擊，現在有一些人，尤其是快要畢業的學生，已經發現到這對我們很不利。這種態度對上課、就業、工作規畫以及工作準備都有莫大幫助。我們學會如何平衡自己，不要太誇張時，就會有很大不同。我們需要記住，什麼才對我們的生活有意義。

如今社會上瀰漫著一種強烈的文化，人們想要找到一份高薪工作。但是一旦你置身其中，它就會變得膚淺虛偽，你可能會開始想：「我在這裡做什麼？我不喜歡這樣。我為什麼要這麼做？」在過去，學生們更想要找有趣、更有個人風格的工作，即使薪水並不高。他們會從那裡開始，看看事情後續會怎麼發展。但我認為現在大家更想要躲避風險。人們想要去大公司上班，這可能會引起不滿。

Q. 您自己有什麼興趣，瑜伽嗎？

對，沒錯，瑜伽，還有瞭解人類大腦的運作方式。明白這件事，做任何事情都會容易很多。做研究、合作、趕上最後期限和教學都會變得簡單不少。我在走進教室前，都會感到有點壓力，儘管我已經教書教了 30 年。這並不重要。你可以將其視為「壓力」，或是理解自己的身體在做什麼，知道這是在完成任務前為自己充電的一種形式。瞭解事情是如何運作的、發生了什麼事，的確有助於對發生中的事情更加開放、好奇和積極。

此外，我熱愛閱讀以及收聽跟閱讀有關的 podcast。我喜歡追蹤科學新知。我覺得它們超有趣的。我不相信讀到的一切，我喜歡自己親自嘗試。我不斷嘗試，發現有些事情是編出來的，而有些事情卻顯得更真實。我是一個科學家，一直在找更多證據，我們稱之為「複製」。所以，如果我在一個地方聽說有某種技術或方法，然後我看到了它的科學依據又體驗到它，它有發揮效果，那麼我就更有可能相信這是有用的東西。這正是我會覺得瑜伽很神奇的原因。

Q. 您練瑜伽有多長時間了？

很多年了，我大概從十八、十九歲開始練瑜伽。那時我在當兵，壓力很大。這讓我開始找一些東西排解當時的不快樂。瑜伽並沒有讓我「快樂」起來，但它能讓你建立一種東西，多年來一直給你力量和帶來新的觀點。這就是我多年來堅持練習瑜伽的原因。我珍惜每一次重新學習瑜伽的機會，我現在又當老師了，所以最近這段時間沒有什麼空可以練瑜珈。不過，對，我喜歡做瑜伽。

瑜伽也有益於我們維持身體健康。在我沒練的那段時間裡，身體健康狀況不太好。我的背痛持續了好幾年，背痛得很厲害。大約在 17 年前，我有一陣子在床上躺了 3 個月。我的背痛很嚴重。太可怕了。你說得對，我們必須照顧好自己的身體。我覺得我們在電腦前工作的這件事，我是個糟糕的工作狂。我的工作時間太長了，在電腦前工作和打電話對身體肯定是一種摧殘。沒錯，要多運動。

例如，在學校裡，今天天氣很熱，可能有 36 度。不過天氣好的時候，我還是看到有人從台積館搭公車下來。

改變習慣會帶來不同的結果。我在離開辦公室時會強迫自己，如果不是天氣太熱或雨太大，就會下來走路。這些小小的調整真的很有幫助。人體可以很神奇，你也可以完全毀掉它。這跟年齡無關。年輕時你可以忍受多一點，等到年紀大了，就會變得更難以忍受。

Q. 我想您肯定激勵了很多學生。

這個嘛，如果能激發出他們的優點，那是我最在乎的。能夠這樣就最好了。他們把我身上好的部分激發出來，而我也展現出他們身上好的那一面，我想我們雙方就有了好的交集。

Q. 有哪位名人或是有志之士深刻影響著您嗎？

我真的運氣很好。有很多了不起的人影響過我。我在不同時期受到不同人影響。他們當中有些是我的老師、家人和顧問，有些是我的同事，有些是我的學生。當你跟很多人密切往來且樂於接受新的體驗時，你自然會受到影響。很難一一指出到底是誰，實在是太多人了。

答：最後一個問題，您對於對您的領域感興趣的學生或年輕學者有什麼建議嗎？

答：在資料科學方面？這要看他們所處的階段和背景來決定。對於有更多工程或電腦科學背景的人來說，其中有很多人都搶著要進 Google、Meta 或 OpenAI 這樣的大公司。我給他們的建議是要小心。睜大眼睛、敞開心扉，誰都想要站在科技第一線創造很酷的東西。不過這些很酷的東西

往往會產生深遠影響，而且不見得是正面影響。我們已經可以看到這些技術所帶來的影響。如果你是技術出身並且加入這些大公司，就別只想著打造很酷的工具。要多考慮誰會使用它們以及如何使用。睜大眼睛，看看在人類社會和國家中快速投放這些科技，會帶來哪些更廣泛的影響。

想走學術路線的人，要好好想一想學術圈能在哪些方面帶來價值。新技術的出現奪走了工業領域更容易回答的研究問題，因而影響到一些學術領域。不過，在其他領域仍是需要學者。例如我們在商學院研究快速部署科技所造成的影響，這件事就非常重要。我們身為學者，填補了公司和政府留下的空白，提供必要的研究和分析。

如果你想從事學術工作，請找到一個你能真正看到附加價值的領域或角度。跟那個領域的人交談，瞭解他們正在研究解決的問題，確定這些問題是否與你的興趣和期待一致。

至於關鍵技能，必須擁有技術背景。就算你不專精，也需要瞭解程式設計和基本的機器學習概念。這些技能將為你在資料科學領域打下堅實基礎。你不一定要有能力建構出下一個演算法，但最重要的技能是瞭解何時使用這些工具，以及如何用於解決問題。這是最困難的部分。這也是你需要人類出手的地方。

Dean's Message

With the arrival of another new semester, the College of Technology Management welcomes another new batch of students and bids farewell to another group of pupils. Dean Che-Chun Lin has gone through the hurricane of events that is the Covid-19 pandemic since his appointment in August, 2019. However, throughout the adversity, he discovered new forms of teaching and learning; he witnessed the Career Mentor Program come to fruition and continues to make efforts towards closing the gap between academia and industry. Lastly, he shares his thoughts on how students can live out the spirit of sustainable developments.

To level up skills and develop a proper mentality

"First of all, congratulations to our students. Being accepted into CTM may just be some students' goal or dream. However, this may not be the case for some others, and that is perfectly valid." Dean Lin states that, as long as students are always open to exploration, to different things and experiences, they will most certainly have a very fulfilling university experience. "No matter if you are straight in from high school, if you have transferred here from a different school or university, when you first arrive at CTM, you might face some troubles getting used to everything. But do not worry, as everything you will have to face, has already or will be met by other students as well. The important thing here, is to gather experience."

Dean Lin also mentions, for new students here at CTM to enrich their time here at university, they must try their best to

experience and work on the following five things:

1. Exchange: gives the opportunity to broaden your horizon and develop a global state of thought and mentality. Going on exchange abroad not only lets you experience a whole new lifestyle and culture; it also helps you grow rapidly.

2. Industry-Academy Cooperation: University courses tend to be more helpful with gaining of academic knowledge, Dean Lin encourages students to participate in internship opportunities in order to improve on skills and develop a different attitude during winter and summer break. Additionally, you could benefit from an early start on interacting with society.

3. Language Proficiency: English is not only a necessary skill to have for globalization, it would also be a tremendous bonus point in the workplace. Dean Lin also reminds students to try to enroll in EMI classes and to attend EMI events.

4. Life Organizing: University is still a place where you could make mistakes and not suffer intense consequences. Therefore, students should not be afraid of failure, new experiences and try to brave new adventures.

5. Attend Lectures: Lecturers often condense their life story into an hour or two to just the purest essence for the audience to absorb. Students could benefit greatly from lectures and even see a substantial shift in their outlook on life or values.

A Shift in Attitude and a Continuance in Learning

Dean Lin believes, for those who are going to be graduating soon, whether they are diving into the job market or furthering their studies with a master degree, developing a fresh attitude is the most important step in their journey.

"You need to have an even more positive and upfront attitude when you first start in the workplace. You need to show your passion towards your work; you need to adjust your method of human interactions and don't be too conceited. Always be open to learning from people of different backgrounds and skills." He also suggests, rather than using salary as the main criteria when job-searching, interest and motive should weigh more in the decision making process. "When you first start your new job, as long as reasonable, you ought to try to do anything the company asks of you. Rather than shying away, you should embrace the idea "I can do it!", and try your best to learn in the process."

Similarly, you also need a change in your attitude when you start graduate school, Dean Lin believes graduate students should be even more forward, to give it your all without holding back. Furthermore, grad students should familiarize themselves and keep themselves in touch with the industry, continue to attend lectures and absorb all sorts of knowledge.

Additionally, Dean Lin implores students to keep learning and exploring even after leaving university, as it is one of the most important things in life; to keep open

to different experiences and continue chasing dreams and inspirations: "You create your own opportunities!"

Post-Pandemic Turning Point: The New Methodology of Teaching

Due to the pandemic, schools all over Taiwan stopped physical classes, this lasted from early 2020 to nearly 2023. However, crisis is often the turning point for the better. With online classes being the prevailing option, teaching methods, location and content has been flipped in one way or the other. Previously, teaching through the internet had been a one-way transfer of knowledge, yet online teaching now enables teachers and students to be able to freely converse, just like a traditional classroom setting.

Asides from that, Dean Lin believes online classes are the key to making learning borderless. "With increased needs, the technology for online teaching will be enhanced. In time, we might be able to learn not only from our own university, but also from universities all over the globe."

One the most controversial topics in the post-pandemic society is whether or not we should revert back to the traditional setting of classes. On this, Dean Lin expresses that rather than going back to how it was completely, we should try to get the best of both worlds and develop a dynamic teaching style. "Teachers should be allowed to hold parts of their courses online in the future. This might even encourage teachers to create fresh, innovative teaching methods and let the students be no longer bound to the traditional construct."

It is also worth noting that CTM's renovation this summer includes classrooms to be fitted and suitable to be used for online classes.

Career Mentor Program: Decreasing the Distance Between Academic and Industry

Started in 2020, the Career mentor program has been going strong for 3 years, it was born to help shorten the distance between academic and industry. As one mentor is only in charge of 3 to 4 students, this program is great for those who are not entirely sure about their path, but already have rough ideas. Students explore different occupations and their own interest with the help of their mentors; some mentors even hold big enough events for all the students in the program.

Dean Lin notes that the most unique part of this program is that to encourage students to pursue different types of learning and broaden their horizons, this program also offers a scholarship to well-performing mentees who are going on exchange abroad, aiming to help students become well-rounded, ultra-unique talents.

Although Dean Lin's term is coming to an end soon, he still believes there are plenty of plans and projects that CTM has potential for, one of them is arranged internship abroad during winter/summer break. "To assist students to have internships whether in Taiwan or abroad would be the best way to close the distance between academic and industry."

Sustainability: What We Can Do

One of the most important and cared for topics of the world is the sustainable development topic. Dean Lin mentions, the biggest issues in United Nation's Sustainable Development Goals (SDGs) are poverty, hunger and clean water, but these are not problems that university students can solve at this stage. We can only try to understand, try to put ourselves in their shoes and give our all to fulfill what goals we can at the moment, such as gender equality and quality education. Dean Lin encourages all students to put words into action through school clubs, service learning or others, no matter if its teaching underprivileged kids at remote areas, cleaning up a local beach or even just changing bad habits and cherishing, not taking resources for granted. "It's not difficult to understand the meaning, what's important is to experience, to participate, to learn."

CTM has undergone plenty of renovations and refurnishing in the course of the summer, Dean Lin reminds students to be thankful towards the alumni, the corporations and the friends of CTM who had all be incredibly helpful and generous. He also hopes students will cherish and protect the environment they've been given so that it can continue to be used for years to come.
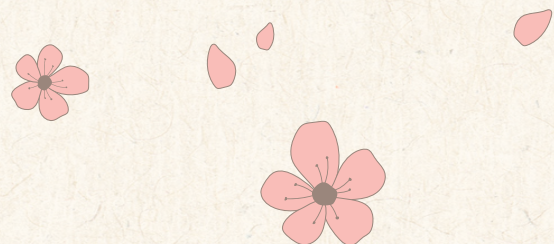
Topic: Corporate ESG -

An operational and strategic approach

Speaker │ Matthew F. C. Miau - Chairman of
MiTAC-Synnex Group

Editor's note: The "2023 Sun Yun-Suan Lecture", recently held by the CTM attracted many listeners. We have prepared highlights of the lectures given by well-known speakers in order for teachers and students to understand the lectures we have prepared. The following are the key points compiled by intern reporter Wang Chien-Yun.

Current Chairman of MiTAC-Synnex Group, Mr. Miau, is also the Chief Director of the Chinese National Federation of Industries. He has in-depth, comprehensive insight and understanding of practices regarding how companies should promote ESG (environmental,

social, and governance). During his speech, Mr. Miau shared his experience in the development of related fields as well as past approaches taken by other sectors and the Group. This includes focusing on the development of green and smart manufacturing and using network organizations as a tool in their marketing channels.

The headquarters of MiTAC-Synnex Group officially opened in 1953. At the time, the Group focused on developing its primary business of flour production. Gradually, the business expanded into other diversified areas, including pasta, beverages, retail outlets, leasing

businesses, and more. After seven decades, the importance of the Group's sustainability was taken into consideration as several maintenance projects got underway, such as adding nature and greenery and implementing energy-saving and carbon reduction at its headquarters. Given this, the renovation of the Group's headquarters was based on the concepts of sustainability and green power. The Group spent NT$1.78 billion to create an "ecological, energy-saving, waste reduction, and healthful building", which won the Taipei Net Zero Award when completed.

While this green design was being added to the renovation of the headquarters, Lien Hwa Fugang Plant was also making proactive efforts to generate power with solar power panels at its warehouse, hoping to achieve the goal of green power generation. Innovative applications such as these not only bring economic benefits to companies, they also reduce dependence on traditional energy sources, contributing to environmental protection and sustainable development. In the process of business management, companies must not only pay attention to current environmental and social trends, they must also be able to predict future directions. As we all know, greenhouse gas (GHG) emissions have become one of the most focused-on issues around the world. Aside from striving to create a sound and eco-friendly working environment for employees, the Group spares no effort to ensure innovation in order to increase work efficiency and employee satisfaction.

How to formulate a complete and effective

strategy is essential when it comes to practicing ESG, and market research surveys play an important role as they help companies understand the latest and most accurate needs in the market. Based on the results of the survey, companies are then able to make adjustments to their product or service portfolios to meet market expectations. For instance, Lien Hwa conducted a market research survey to understand demand in the ratio of nitrogen and oxygen content in the air as well and the ratio of nitrogen and oxygen content equal to the market demand. According to the ratios, Lien Hwa changed the characteristics of its products or services in order to adapt to changes in market demand.

One of the Group's ESG strategies was to introduce innovative applications and technologies to achieve environmentally friendly and low carbon targets in several fields. First of all, the Group has delivered remarkable results by utilizing cold energy in the air separation plant - through bringing in advanced cold energy utilization technology, the cold energy rate can reach 2.0, saving 42% in electricity compared to conventional air separation plants. This technology

saves nearly 100 million kWh of electricity a year for both air separation plants, significantly reducing energy consumption and GHG emissions. Secondly, in terms of the chemical technology sector, the Group was dedicated to developing an eco-friendly plasticizer, while establishing a green supply chain. This effort helps mitigate the impact of chemical products on the environment and boosts sustainable development promotion. Finally, environmental protection and energy-saving measures were implemented in the Group's logistics business. Logistics warehouses provide the most timely warehousing transport services and convert residual heat from the maleic anhydride process into steam and electricity, reducing carbon emissions. In addition, network organizations are used as a tool to be applied in the Group's five major areas: livelihood, system integration and mobile services, e-chemistry, information, and marketing.

Gathering the examples shared by Mr. Miau, we understand that ESG strategies can be suitably categorized into: economic development and environmental sustainability, green and smart development, network organization, and other tools that help facilitate the growth of a company. Economic development and environmental sustainability: Companies should regard economic development and environmental sustainability as closely linked. Through making good use of political, economic, social, and technological tools to analyze strengths, weaknesses, opportunities, and threats, companies can determine

their advantages and challenges and formulate appropriate strategies. Green and smart development: Companies must commit to promoting the development of environmental protection and smart technologies. This includes reducing carbon emissions, improving energy efficiency, promoting a circular economy, applying renewable energy, integrating smart technologies, and employing data analytics as well as other advanced technologies in order to increase productivity and efficiency. Network organizations: The establishment of an industrial ecosystem on the basis of network organizations can facilitate cross-industry cooperation and resource sharing. By forming a cooperative partnership, difficult issues can be jointly addressed, further promoting innovation and sustainable development. Corporate ESG practices must combine trends, innovation and applications so that companies are able to continue to thrive in a changing environment while making a positive impact on society and the environment.

Interview with Professor Galit

Q. **Could you share your academic specialization?**

Okay, so that's actually an interesting question because it keeps changing names. When I graduated with my PhD, I specialized in Statistics. But things have changed over time. If you ask me today, what is my specialization, I will not answer Statistics. Today, some people would say Data Science. I also do more of machine learning. It's kind of a combination of statistics and machine learning. So I would say data science is probably the name that today people would use.

Q. **I've noticed that you won so many awards. Outside of CTM office, there is a billboard and there are so many posters with your name on them.**

Well, I guess CTM is very good at making awards visible and creating nice ones. CTM also has awards for different important efforts. As a business school, these awards reflect what we consider important. We have research awards, which make the research happening here more visible and encourage more faculty. We also have teaching awards because teaching is super important, and not every school emphasizes it. In the college, there is a big effort to improve teaching, especially in English. Additionally, the school has mentoring awards, which are
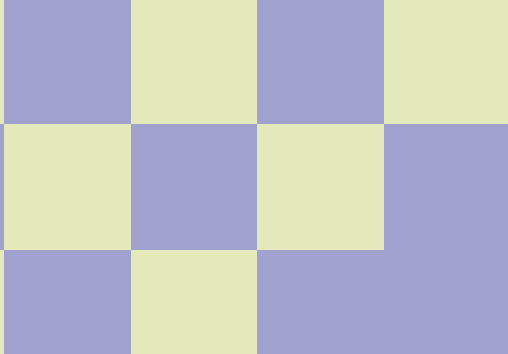
In this issue of CTM E-News, we have interviewed Professor Galit Shmueli, Chair Professor of Tsing Hua University, Institute of Service Science, who specializes in business analytics, big data, online markets, and statistical and data exploration methods. Let's take a closer look at Professor Galit from Israel through the following interview.

interesting and diverse because faculty mentor in different ways. Some have more PhD students, some have more master's students, and others have more undergraduates. There is also mentoring of junior faculty, which is important but not part of that award. These awards reflect the values we care about in this school. As for why I'm involved in these awards, well, I've been here for nine years, and I deeply care about and love this environment. The colleagues, the institute, our students, this whole environment is truly great.

Q. **you mentioned that your expertise is Data Science. And why did you learn this? It was almost a random choice. I never, ever imagined what I wanted to do. When I was in high school, I was pretty good at a bunch of different things. So it wasn't that I was more inclined towards one thing or another. I liked a lot of different subjects in high school. I remember studying math, history, learning another language, and advanced English (I am a native speaker). I had a diverse set of interests.**

After high school, unlike in Taiwan where you go straight to university, in Israel, where I grew up, we had to go into the military for two years. After that, I had to decide what to study in university, and I had no idea what I wanted to study,

especially because university topics are different from what we learned in high school. In the end, I pursued a bachelor's degree in psychology and statistics, two different majors. I didn't even know what psychology and statistics were since we didn't have them in high school. So, how did I end up in data science? A psychologist told me that psychology is great, but most psychologists are terrible at statistics. So, if I wanted to study psychology, I should also learn statistics. Since I enjoyed math in school, I decided to give it a try. That's how I ended up studying those subjects.

When I finished my undergraduate degree and had to decide what to do next, I struggled between choosing between psychology and statistics. It was a very difficult decision because I had no clue. I even tried consulting, but it didn't help. In the end, I asked myself, which homework did I enjoy doing more? Did I prefer psychology projects and homework, or did I enjoy statistics more? I realized I enjoyed statistics more, so I chose to pursue a master's degree in statistics.

Eventually, I went on to pursue a PhD because there weren't many good job opportunities for statisticians after my master's. This was before the era of data science and big data, so statistics jobs weren't appealing.

Q. So in your teaching approach, you also blend some real empirical approach to students?

You're absolutely right. Especially because we're in a business school. In all my classes where I teach data mining, forecasting, or visualization, I always incorporate real data. I also strive to collaborate with companies so that students can work in teams on real projects. This makes a significant difference because it's not just a problem that I know the answer to and the students don't. That's not how I approach it. Instead, we work with the company, understand their problems, analyze their data, and come up with innovative solutions they may not have considered. Then we attempt to solve these problems. By the end of a semester, after everyone has worked on a project, we can achieve some remarkable outcomes, despite encountering numerous challenges along the way. It's a truly fascinating learning experience.

Q. So you also have to contact with companies. Are those companies willing to cooperate with you?

Yes, that's actually a bit tricky because when I first came to Taiwan, I didn't know anybody, which made it challenging. Fortunately, my excellent colleague down the corridor, Professor Somya

Ray, had already been collaborating with companies for several years. Another ISS colleague, Furen Lin, who founded our institute, also had connections. They both introduced me to companies and organizations in Taiwan. The companies I typically collaborate with are not the big ones. They are usually smaller startups that lack the resources for data science and sometimes even lack organized databases. Nonetheless, they are enthusiastic about collaborating and exploring the potential usefulness of their data. Over time, we have built multiple relationships, and now many of our alumni who were once my students work in companies. They are eager to collaborate because they understand the benefits it brings to the company. These collaborations benefit the students, the companies, and the alumni. Companies often seek interns and job hires, creating a perfect ecosystem that works for everyone. Everybody recognizes the value in the learning, the experience, and the individuals involved.

Q. To provide insightful things to companies, you should also keep up with updated information for data science?

Yes, you do. It's a very interesting question that you're asking. Do I need to make sure that I know the latest deep learning technique that's coming out and

the technical details of the reinforcement learning that ChatGPT is using? That's an interesting difference between a computer science or engineering school approach where they're trying to really run after the latest technological solution. In contrast, my approach is a business analytics approach. Data science is at the intersection of several fields. It depends on who's using the technology and for what. It's a combination of a lot of stuff. You have statistics, you have computer science, you have engineering… There are so many aspects, but it depends on where you come from. We're coming from the business school, and that's where the business analytics comes in.

In the business analytics world, framing the business problem properly, and translating it into an appropriate analytics problem is important. And that's the hardest thing. For example, if you want to improve customer service, maybe that's your business problem, but now how do you translate that into some kind of a machine learning task? It's not obvious at all. So taking the problem and breaking it down and making it at the level of an algorithmic problem is a huge problem, and that's where the business analytics challenge is. We teach student about getting the problem right – we're not training them to be the engineers who program the solution. It's really about understanding the types of methods that are available and selecting suitable ones. And many times, the classic machine learning approaches and statistical models are actually pretty good and pretty powerful. Maybe they won't be the most accurate, but they'll actually be sufficiently accurate and much more interpretable. So understanding those methods, understanding how they are different from the latest and greatest machine learning model is important. You want to understand the basics, but I don't think you have to run after the latest tweak developed in industry. And that's why academia in some fields is in big trouble, but not here in the business school, because you can't beat us with a faster algorithm. That's not what we do here.

We're thinking about how to integrate analytics into a decision-making system.

Q. **You really love to do research, and there's also a job that can let you focus fully on research, but why becoming a professor?**

Here is how I discovered that I enjoyed teachin. When I was an undergrad, it was a three-year undergrad program, and in the third year, it was a bit unusual, but I was a Teaching Assistant. I became a TA because in the statistics department where I was studying, they had a shortage of graduate students who are usually the Tas, but they needed someone to teach courses like a probability course. I was pretty good in that program, and they offered me an opportunity to be a TA. So I said, okay (it was also a great way to pay my tuition!).
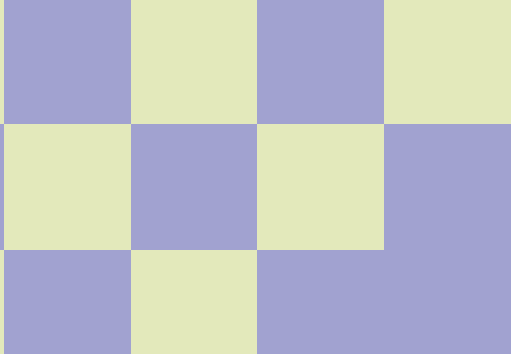
That first year as a TA was very terrifying. I had to do weekly recitations. Once a week, I would have to go in front of a class of about 30 students and solve problems on the board and help them with questions. And I was an undergrad too, right? I remember one day, I even forgot my notes at home, and there was no way I could go back home because the traffic was too bad. Until today, I remember what the topic was because it was so terrifying. It was multinomial distributions. That experience was very stressful, but it was very satisfying. I realized all of a

sudden that when you're able to help other people understand really difficult stuff, it's pretty cool. So that was my first teaching experience. And then I taught again when I was in the masters and PhD programs. In Israel, it's very standard to teach as a graduate student. So I was a TA throughout my master and in the PhD. Towards the end, I was the instructor of a course, and I really liked that. I think I was doing well teaching back then because I enjoyed explaining these complex things. So being a professor includes two things I value and enjoy: One is the research, definitely, and I always like to say, they're paying you to think about the things that you are interested in. It's a very good job. And then the other thing is you get to interact with students. Even though it's not an easy thing, none of it is easy, you learn a lot. You really learn a lot.

I've taught students in different countries, and they're so different. And also over time, students have changed a lot.

And I love having my students for many years ago, some of them are still very good friends. So that's also a very valuable thing to have.

Q. **How does the students change?**
Wow, things really changed a lot in so many ways. When I was in my PhD, it was an engineering school, so my students were engineers. And it's a

very, very different mindset than business school students. The engineers, you teach them some math or probability, they take it and learn it. If you try anything like that in a business school, at least outside of Taiwan, graduate students will really challenge you. They ask, why do I need to learn that? Why is that important? So you have to learn to motivate everything.

And then other things are different between countries, for example, in the United States, and in India, I found students to be very independent. They prefer to work alone. In Taiwan, I noticed students work really well together, at least the ones that I teach. The group really is a strong unit.

So working in groups, I think, is very powerful in Taiwan.

Another thing that is different in Taiwan is how open students are to answering questions, to being unsure and not just being silent in the class. So that's something that forced me to really change lots of the ways that I was teaching when I moved to Taiwan. Because in Taiwan, students don't ask questions and they're afraid to answer. So I had to change all kinds of things in my classroom and in how I teach so that they feel more comfortable being active. And I think that at the beginning of the semester, it's a little scary for them. But throughout the semester, it evolves. And people are so much more open to asking questions and

showing their weaknesses and realizing that nothing bad is going to happen and engaging more with each other. I've also noticed that people are becoming more engaged with each other, realizing that nothing's going to happen otherwise.

Another change I've observed is that students seem a lot more stressed. In Taiwan, we didn't experience COVID as badly as other countries where they had long periods of lockdown. It was not as severe here, but even so, I can definitely feel that the students now, whether due to COVID or not, just seem super stressed. The stress has been increasing over the last few years, even a bit before COVID. I'm not sure of all the reasons, but it's definitely not helping the learning process. I think we should do something about that.

Q. Is it due to job or internship hunting?

Maybe the stress is because of the competition to find jobs and internships. Previous students also had to find jobs and internships, but now maybe the competition is fiercer, especially with market downturns due to issues like COVID. That uncertainly adds a lot of stress. Additionally, I seriously think social media is not doing us any good.

Would we look back and ask ourselves, 'Why didn't I spend 10 more hours on

social media yesterday?' I don't think anybody says that, right? I believe social media is a significant problem. It's a change that has occurred over the years and has gotten crazier now.

People aren't sleeping well or eating well. They're constantly worried about what they're doing, what they're talking about, and what others are talking about. That's a stressful situation to be in. I think your generation is now figuring out how to deal with it and some are saying, 'Enough! This is crazy.' There was a big wave that hit us all, and now there are wake-up calls, especially for graduating students, realizing that this is not good for us. This realization will help a lot with classes, jobs, job planning, and job preparation. It will make a big difference when we learn how to balance ourselves and not go too crazy. We need to remember what truly is meaningful in our life.

There's now a strong culture where the goal is to get a job that pays well. But once you get into that game, it becomes shallow, and you might start questioning, 'What am I doing here? I don't enjoy this. Why am I doing this?' Previously, students were more driven towards finding something interesting, something more their style, even if the pay wasn't high. They'd start from there and see how things go. I think now there's more risk aversion. People want to join big companies, and that can cause

dissatisfaction.

Q. What is your personal interest, I think it's doing yoga?

Yes definitely. Yoga and understanding how our minds work. When you understand it, it's a lot easier to do everything. It's a lot easier to do research, to collaborate, to deal with deadlines, and to teach. You know, before I walk into a classroom, I'm always a bit stressed, even though for 30 years I've been doing this. It doesn't matter. You can think of it as "stress", or you can understand what your body's doing and realize it is a form of energizing yourself before a task. So understanding how things are working, what's going on, really helps to be a lot more open and curious and positive about the things that are happening.

Also, I really enjoy reading a lot of books and listening to podcasts about things like this. I like to follow the latest science about these kinds of things. I find them super interesting. And I love to try these things out myself because I don't believe everything that I read. I try things out, and find that some things are made up, while some things appear more true. And as a scientist, we always try to look for multiple evidence, you know, what we call "replication". So if I hear about a technique or approach in one place, and then I see the science about it makes sense, and then I experience it and it

works, then I'm more likely to believe that this is something useful. And that's why I think yoga is amazing.

Q. So how long have you been doing yoga?

Many, many years. I started when I was probably 18 or 19. I was in the military back then, and it was very stressful. And that's what sent me to find something to resolve my very unhappiness back then. Yoga didn't make me "happy", but it builds in you something that for many years gives you strength and perspective. That's why I've been doing yoga for many years. And I cherish every time I have an occasion to be a yoga student again, which is very hard these days because now I've become a teacher again. But yes, I love doing yoga.

Yoga is also extremely helpful for maintaining our health. During periods that I stopped practicing my health was not as good. I suffered from back pain for several years, really bad back pain. There was a time about 17 years ago, where I was in bed for three months. I had such bad back pain. It was terrible. And so you're right, we have to take care of our body. And I think the fact that we're in front of computers--- I'm a terrible workaholic. I work way too many hours-- working in front of computers and being on the phone is devastating to the body for sure. And yeah, being active. So for

example, on campus, now it's hot today, around 36 degrees. But on days that it's nice and comfortable, I still see people taking the bus down from TSMC building.

Change of habits would make a difference. I always try to force myself when I'm leaving the office, if it's not like super-hot or raining like crazy, I will walk down. So making these little adjustments really help. I learned that our bodies can be amazing, or we can totally wreck them. And it doesn't matter how old you are. You can tolerate a little more when you're a kid, but at some point, it's more difficult.

Q. I think you definitely inspire a lot of students.

Well, if it brings out the good parts of them, that's all I care about. That's the best part. When they bring the good parts out of me, and I bring the good parts out of them, then I think we've both been in a good encounter.

Q. **Are there prestigious or motivated person who has influenced you a lot?**

I've been really lucky. There are so many amazing people who have influenced me. I've been influenced by multiple individuals at different points in time. Some of them were my teachers, family members, and advisors, some were my colleagues, and some were my students. When you interact closely with a lot of people and are open to new experiences, you naturally get influenced. It's hard to point out specific individuals because there are so many.

Q. **The last question is, what advice would you give to students or young scholars who are interested in your field?**

In data science? Well, it depends on their stage and background. For those with more of an engineering or computer science background, many of them rush into big companies like Google, Meta, or OpenAI. My advice to them is to be careful. Keep your eyes and heart open because it's exciting to be at the forefront of technology and create cool things. However, these cool things often have far-reaching impacts, not always positive ones. We can already see the influence of these amazing technologies. So, if you're coming from a technical background and joining these big companies, don't just think of it as building cool tools. Consider who will be using them and how. Open your eyes to the broader implications of deploying technology rapidly in human societies and countries.

For those interested in academia, it's crucial to think carefully about where academics can bring value. Some academic fields may suffer due to new technologies taking away research questions that can be more easily answered by industry. However, in other fields, academics are still needed. For example, in business schools, our work studying the impact of rapidly deployed technologies is incredibly important. As academics, we fill the gap left by companies and governments, providing necessary research and analysis. So, if you want to pursue an academic job, find a field or angle where you can truly see the added value. Talk to people in that field, understand the problems they are working on, and determine if those problems align with your interests and excitement.

As for key skills, having a technical background is highly valuable. Understanding programming and basic machine learning concepts is essential, even if you're not an expert. These skills will give you a strong foundation in data science. You don't have to be able to build the next algorithm, but the most important skill is to understand when and how these tools fit into solving problems. That is the hardest part. And that's the part where you need the human.

Connecting the Dots and Enjoy Your Journey

郭孟勳 科管所 碩士 2023 畢業

The interview was conducted according to the regulations of the CTM Travel Grant for Inviting Coauthor to Visit. In this report, the scholar interviewed is ISS Chair Professor Galit Shmueli's coauthor, Prof. dr. ir. David Martens, Chair, Department of Engineering Management, Director, Applied, Data Mining Lab, University of Antwerp.

Introduction

Dr. David Martins, a professor from the Department of Engineering Management at the University of Antwerp in Belgium, is currently conducting research on the

此訪談係依據本院「科管院教師邀請共同作者來訪獎助辦法」，邀請獲獎來訪學者以公開演講或座談、訪談等方式，與本院師生分享其研究經驗。此次受訪學者為服科所徐茉莉老師之共同作者 Prof. David Martens，現任 University of Antwerp 教授暨工管系主任及應用大數據實驗室主任。

applications of data mining. Other than doing research, Dr. Martins enjoys playing squash and swimming. He recently visited National Tsing Hua University to collaborate with Prof. Galit Shmueli on their joint research project.

Research Journey

Dr. Martins embarked on his academic journey as a master's student in computer science at the Catholic University of Leuven in Belgium. After completing his studies, he pursued business education at NEOMA Business School. Following his business education, he decided to further his studies and obtained his Ph.D. in applied economics from his alma mater, a journey that stemmed from his fascination with the combination of AI and business.

During his studies in computer science, Dr. Martins gained exposure to machine learning and AI, which sparked his interest. This interest carried over into his time at the business school, where he became captivated by the potential of combining AI with business applications. This curiosity ultimately led him to pursue his Ph.D. research in the field of applied economics.

While becoming a professor was not initially intended, Dr. Martins found the research journey during his Ph.D. to be enjoyable and fulfilling. He developed a deep appreciation for the research process, including creativity, problem-solving, and the freedom to choose one's focus. Although he had worked as a consultant at KPMG and still advises in that capacity, he found great satisfaction in being a professor, particularly in the opportunity to work with young and intelligent individuals.

As a professor at a business school, Dr. Martins works and publishes in computer science journals and conferences. He highlighted a notable difference between his research approach and that of traditional computer science research. While computer science research typically starts from a specific problem within the field and seeks solutions, Dr. Martins begins with a business problem and then explores computer science solutions to address it. This difference in starting points often leads to distinct research outcomes.

With the increasing advancement and utilization of AI, Dr. Martins' research in the intersection of AI and business has become even more appealing and relevant. Businesses are increasingly adopting AI, resulting in a greater need for research on the business problems associated with AI.

In Dr. Martins' approach to teaching, he brings his research into the classroom, discussing the kind of research his team is involved in and presenting the real-world problems they are working to solve. He encourages students to pursue research through internships and, if interested, consider pursuing a Ph.D. to delve deeper into their own research.

When it comes to mentoring his students, Dr. Martins has transitioned from being stricter and collaborative to a more hands-off approach. He now sees himself more as an advisor, providing ideas and guidance while allowing students to take ownership of their research. He
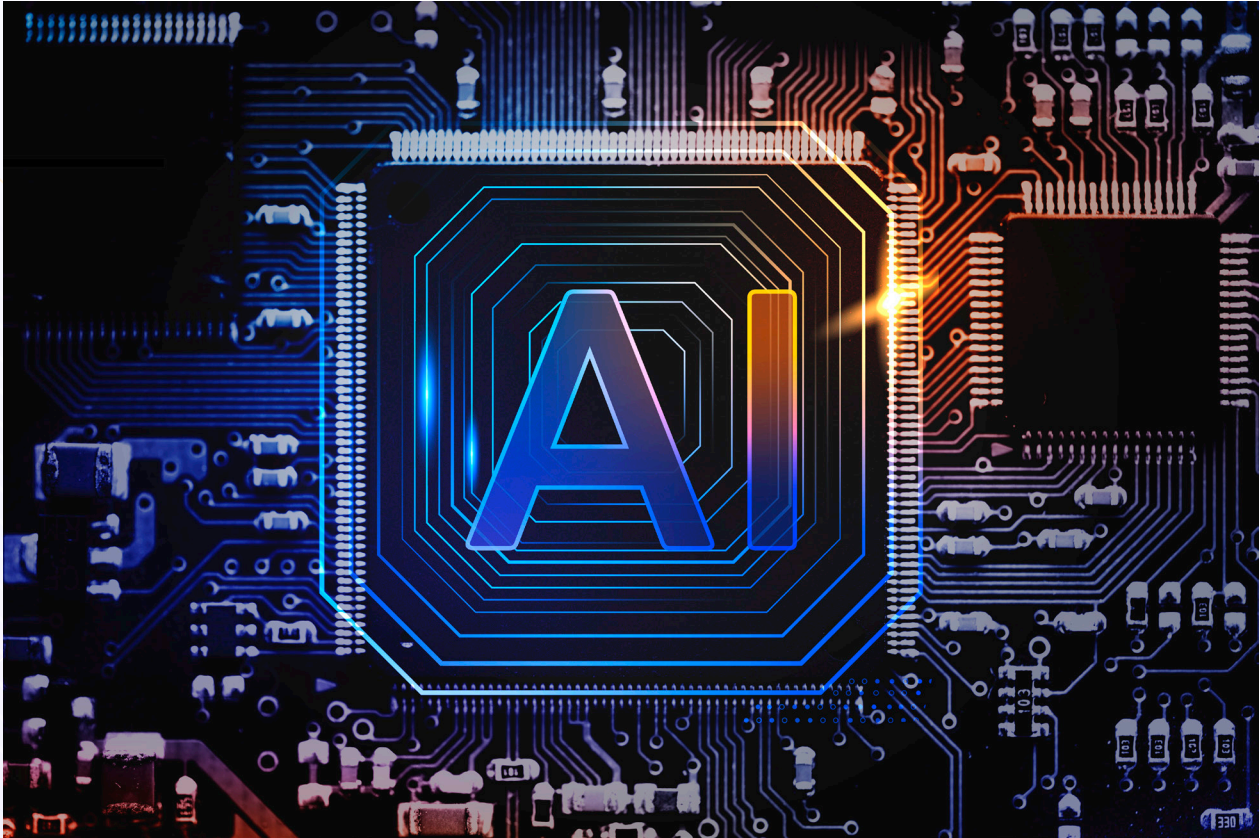
holds weekly meetings with his students to discuss their progress and provide support as needed. He believes that pursuing a Ph.D. is a creative process

where students learn to conduct research independently.

Research Focus

Explaining the decisions made by complex AI models is a key focus in Dr. Martins' research, particularly in the field of explainable AI. Many AI models make decisions about various aspects of our lives, such as college admissions or credit approvals, but their inner workings can be highly complex. These models often operate as mathematical formulas without providing clear reasons for their decisions. The goal of explainable AI is to bridge this gap by providing explanations.

Dr. Martins' journey into this field began during his Ph.D. studies, where he worked on banking applications, including credit scoring, a domain that requires providing explanations for decisions. As deep learning gained prominence, and neural networks with millions or even trillions of parameters became prevalent in image and speech recognition, the need for explanations grew more critical. The field of explainable AI witnessed significant growth due to the complex nature of these models and the desire for explanations. Dr. Martins feels fortunate to work in this area, given its relevance and wide range of applications.

Challenges facing AI

Dr. Martins mentioned that in the field of data mining and artificial intelligence, one of the key challenges and discussions

revolves around responsible AI. At the same time, ensuring that AI models are explainable and understandable is a crucial component of ethical AI. It involves questioning how the model behaves, whether its decisions make sense, and how it treats different individuals or groups. Fairness is another significant concern. The focus lies on detecting and addressing biases, such as gender or nationality discrimination, and ensuring that AI models do not perpetuate such inequalities. Privacy is also a major aspect, encompassing issues like obtaining consent for data usage.

The increasing importance of addressing these challenges stems from the widespread use of AI. As AI becomes an integral part of our lives, from decision-making processes to the content we consume, the risks associated with AI, such as discrimination, lack of transparency, and privacy breaches, become more apparent. Hence, it is vital to thoroughly consider the risks and ethical implications inherent in AI development and deployment.

Dr. Martins also brought up another significant challenge that lies in the concentration of AI advancements within a few major companies. Deep learning, a core technology for tasks like speech recognition, has primarily been developed by large companies in China and the United States, such as Facebook, Google, and others. The resource-intensive nature of building and training complex models like ChatGPT requires substantial funding, often beyond what universities can afford for a single model. Consequently, there is a concentration of

power and technological advancements in the hands of a limited number of companies, raising concerns about the potential implications and risks associated with such concentration.

In summary, the challenges in the field of data mining and artificial intelligence extend to responsible AI practices, including explainability, fairness, and privacy. The increasing use of AI in various domains amplifies the need for addressing these challenges. Additionally, the concentration of AI advancements within a few major companies highlights the importance of considering the potential risks and implications associated with such centralized power. Striving for ethical and responsible AI development and deployment is crucial to ensure that these technologies benefit society as a whole.

Governments' Regulations on AI

Thinking ethically in AI is becoming increasingly important, and both companies and researchers are moving towards considering these issues. Dr. Martins pointed out that there is a clear need for regulations that ensure all companies take ethical considerations seriously. To evaluate model correctness, the focus has traditionally been on accuracy, such as predicting creditworthiness accurately. However, the field is expanding to address other aspects, such as fairness. Privacy is another crucial concern. Researchers consider the anonymization of datasets, the sensitivity of personal data, and how data is treated. Exploring these

ethical dimensions involves a range of techniques and concepts. Collaborations with companies also provide real-world problem-solving opportunities, allowing algorithms to be developed and validated on specific datasets. To sum up, ethics in AI is a crucial area of concern, and governments are beginning to regulate the field, but there is still a need for companies to actively consider and address ethical implications.

Dr. Martins' Take on AI Technology

Dr. Martins commented that integrating AI technology, such as using chat GPT tools, with learning can be a valuable approach for students while some colleagues may express reservations about relying on chat GPT for educational purposes. However, he figures that it is a tool that is continuously improving, and students should have the

opportunity to explore and understand its capabilities and limitations. By actively engaging with chat GPT, students can gain insights into what it can and cannot effectively accomplish, thus developing a more nuanced understanding of its applications.

In terms of evaluation, Dr. Martins mentioned that traditional methods like writing papers may need to adapt to accommodate the integration of AI technology. It is becoming increasingly challenging to assess students solely based on their ability to write a comprehensive paper, especially when tools like chat GPT are available. As an alternative, professors could consider incorporating assignments that require

students to reflect on their experiences using chatGPT. This approach allows students to explore the limitations and potential of the tool while gaining a deeper understanding of its capabilities.

Also, Dr. Martins pointed out that while chatGPT has its strengths, it is crucial to acknowledge its limitations. For example, it may struggle with understanding the specific nuances or context of a given task, leading to less accurate results. Therefore, it should be viewed as a complementary tool rather than a complete solution for complex assignments. By actively engaging with chatGPT and experiencing its strengths and limitations firsthand, students can develop a more informed perspective on how to best leverage AI technology in their learning journeys.

Regarding the question of whether AI will replace jobs in the future, Dr. Martins thought that the widespread adoption of AI is not expected to replace jobs entirely. However, individuals who possess the skills and knowledge to effectively work with AI are likely to replace those who lack such expertise. Consequently, it is crucial for students to familiarize themselves with AI and understand its implications for future employment opportunities. By gaining proficiency in AI technologies, students position themselves to take advantage of emerging job prospects and contribute meaningfully to organizations leveraging AI.

Advice for Data Mining Newcomers

Dr. Martins mentioned that if you're new to data mining and looking to learn

more about the topic, there are several recommended resources and references that can help you get started. One highly recommended book is "Machine Learning for Business Analytics" by Delichmilli. This book provides a solid foundation in machine learning specifically tailored for business applications, making it an excellent starting point.

Apart from books, there are numerous online videos and tutorials available that can enhance your understanding of data mining. These resources can be particularly useful for business students or individuals interested in applying data mining in a business context. It's important to note that while reading books is a valuable learning method, it is also essential to gain practical experience by working with real-world datasets.

In addition to studying resources, there are some important tips to keep in mind when entering the field of data mining. First, it is crucial to have programming skills, particularly in Python. Python has become the go-to language for data science and is widely used in the field. There are numerous free online tutorials and datasets available for learning Python, making it accessible to beginners.

Another important aspect is developing business knowledge. Data science is all about solving business problems, so understanding the business context is vital. Acquiring domain knowledge in the industry you wish to work in will greatly enhance your ability to apply data mining techniques effectively.

Furthermore, communication skills play a significant role in data mining. Being

able to effectively present and visualize data, as well as communicate insights, is essential in conveying the value of your analyses to stakeholders. While this skill can be learned and improved over time, it is important to be aware of its importance from the beginning of your data mining journey.

In a nutshell, to start learning data mining, it is recommended to read books. Simultaneously, learning Python programming and actively working with real data will solidify your understanding of the techniques. Additionally, developing business knowledge and honing your communication skills will further enhance your abilities as a data mining practitioner.

Advice for Students

Dr. Martins mentioned that as a professor and a parent of young children, time management is a crucial skill he has developed. He said that individuals should learn to prioritize and focus on tasks that align with their passions and responsibilities.

Discussing stress in academia, Dr. Martins recognized its prevalence and the

waves of stress that come with different stages of academic life, and he suggested that dealing with stress involves finding effective coping mechanisms, whether it be engaging in hobbies, practicing yoga, or seeking support from friends. The need to establish boundaries and avoid burnout is also highlighted, urging individuals to be aware of their limitations and prioritize their well-being.

Lastly, Dr. Martins provided advice for individuals in their twenties, particularly college students. He emphasized the importance of gaining AI skills and familiarity with data science, as well as cautioned choosing jobs not solely based on salary. He mentioned that strategic job choices that offer opportunities for learning and growth should be prioritized, and while it's acceptable to switch jobs when necessary, excessive job hopping can raise concerns for potential employers.

Hence, Dr. Martins advised that students take the time to carefully consider career choices and make informed decisions. He emphasized the need to strike a balance between exploring different paths and demonstrating commitment and stability on one's resume.

Things to do in Belgium

Lastly, Dr. Martins shared some interesting things to do in Belgium. He indicated that Belgium is indeed famous for its chocolate and beer. When visiting Belgium, indulging in the delectable chocolates and savoring the wide variety of renowned beers is highly recommended. Additionally, there are other experiences that shouldn't be missed. For example, exploring the picturesque city of Antwerp where he teaches, known for its diamond trade and rich history, can be a delightful venture. Also, the capital city of Brussels offers numerous attractions, allowing visitors to immerse themselves in its vibrant culture should not be missed too.

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