Music App Teacher
No difficulty in teaching piano

[Bloomberg Businessweek – Hong Kong/Taiwan, 06 Nov 2013] "I find this note is deviated from the requirement seriously. Besides, the speed of singing is a little bit faster than the original music." This strict music teacher uses her sweet voice to point out the accuracy of pitch and beat of student, Jacky, and use a pen to point the problems on the music score. This name of this teacher is AURALBOOK, which is developed by CEO of Playnote Limited, founded in 2010 and his team, with about 1 million Hong Kong dollars in 2 years time. It can be used in mobile phone and tablet computer. It is the world first interactive electronic music book and also the leading artificial intelligent music teacher in the world.

She can listen to your singing, test your accuracy of pitch, rhythm, power and memory and use interactive real human voice to point the issue. AURALBOOK is totally difference from those music entertainment apps, e.g. "Music Talent" or "Guitar Hero". Playnote is interactive software for professional use. It is dedicated for students who will participate music examination of ABRSM (Associated Board of Royal Music Schools, UK), AMEB (Australia Music Examination Board) and RCM (Royal Conservatory of Music, Canada) etc. It is a creative music examination tool. Ms. Cheung Pui-Shan, Professor of Hong Kong Academy for Performing Arts said "If music and technology are combined in a good way, a revolution in music education will happen."

Currently, more than 100,000 apps have been downloaded worldwide. The business model is based on selling questions. There are more than 2,000 in the database and a pack of 60 questions is charged for Hong Kong dollar 98 only. "The target of the product is very obvious. The cost is much lower than private lesson. It will be a very good business." Professor Cheung continues. Jacky, who will take part in ABRSM theory examination in the coming January said, "The cost is very attractive. We need to pay HKD300 to 400 per 45 minutes lesson but we only need to pay less than HKD 100 to use Playnote software and we can practice for a very long period."

The revolution in music education by Playnote will continue. Eric said the next generation of AURALBOOK will provide more functions and it aims at teaching piano, guitar, etc. The new product can only be available next year as the software is based on the syllabus of different grades of different examination authority worldwide. The development requires huge human resources and engineering resources. Besides, the level of technical difficulty is at least double of the previous version. The next generation must have extreme sensitivity and accuracy analytical capability in order to capture student's performance, which is multi-track and very complex. The new version must also need to process and judge the pitch, rhythm, power and even emotion of the piece in a fast way. This is very challenging. Eric said the next step that Playnote needs to do is even when student is playing a complex music, student can get professional teaching through AURALBOOK, which should be the best companion of examination candidates.

People may feel boring when they hear about "taking examination". However, this nice teacher will give different reaction based on student's performance. If the performance of student is good, she will praise you without reserve. However, if student performs in a bad way, she will blame you directly: "Hey what are you singing?

Please try again!" She will analyze student's answer and performance and find out the reason. Sometimes, it will give some unexpected answers, just like Siri. Eric said that the team has tried a lot of effort in designing the conversation. "During the development of the App, we have though about all kinds of possibilities already." This proves that AURALBOOK is not just professional but also is a music teacher with real life. The core competence of AURALBOOK is the digital signal processing, artificial intelligence and cloud computing, sensitive and accurate analyze system and huge database. All these give music students, teachers, schools and professional organizations a creative way to music research methodology.

Even music is art and software development is technical development, the current technology allows things that cannot be combined previously, are mixed together and the new things provide an interesting outcome. The major research of Eric when he studied electronic engineering at HKUST was digital audio signal processing and artificial intelligence. Apart from engineering, Eric also loves music. Since 1997, Eric performed in opera as tenor and worked as conductor in orchestra. He also has worked as piano and vocal teacher. At the same time, Eric has started his entrepreneurship life since the university stage. He has worked as senior management in various high technology companies, e.g. Perception Digital, Philips Electronics, etc. The market feedback of AURALBOOK is very good and a number of awards are received. These awards include the Best Startup Award and Merit Award in eLearning of APICTA, the most prestige award in Asia Pacific.

On the other hand, there is scruple for Eric after getting good response from market and awards, "At this moment, we know there are some people are watching what we are doing and try to copy." Concerning AURALBOOK, Eric continues, "In general, clients with professional knowledge and idea will ask developer to develop. On the other hand, people know technology do not have the professional music knowledge and practical music teaching experience." In-house team does all the development work of content and technology without external developers. Even though the team needs to use a lot of resources and the development time is long, the team still handles everything by themselves. As a result, content, software development and marketing are all done by Playnote.

"Besides, we are still observing whether the combination of IT and music is good. We are also checking what the size of the market is. " Eric said on one hand they need to prevent other to copy, they also need to increase the market size on the another hand. That is also the reason why they focus in professional market and refuse to develop music entertainment app for mass market.

The examination of Associated Board of Royal Music Schools (ABRSM) can be found in 90 countries around the world. There are more than 630,000 examination candidates every year. This is a big number and the number is very stable. Prof Cheung continues, "while the product is for professional market, it is actually also for mass market, which guarantee the demand.".

Daisy Chan, a private piano teacher with 10 years of experience, said, "The cost of face-to-face teaching lesson is really expensive but it cannot be replaced at this moment. Besides, using software to learn is suitable for student with high level of self-disciplinary only." Eric said the product can combine the two teaching mode together. Teacher can review the practice record of student and student's performance to determine the content in the face-to-face teaching lesson.

"Technology provides another possibility in the practical needs in teaching. It is a good message for music industry but it takes some time to prove." Prof. Cheung said.

In conclusion, the launch of artificial intelligent music teacher AURALBOOK gives a professional and creative solution to music students. It starts the revolution in music education.

音樂APP老師
教琴冇難度

▶ **Auralbook** 是一位「有血有肉」的人工智能音樂老師

▶「音樂和科技結合得好的話 將會掀起一場新的音樂教育革命」

「我聽到這個音，走音很嚴重哦！而且唱得比原來的速度還快了一點點，」這位嚴格的音樂老師用甜美的嗓音，指正學生Jacky的音準與節奏，並在樂譜上把唱錯的音圈出來。這是 **Playnote Limited** 行政總裁**容志偉**在2010年與團隊斥資100萬港元，歷時兩年研發出來的Auralbook，適用於智能手機及平板電腦，是全球專利首創的互動式電子琴書，也是全球領先的人工智能音樂老師。

她會聽你唱歌，測用戶試唱的音準、節奏、輕重和記憶，以全人聲互動語音指出用戶需要改善的地方。與市面上如「鋼琴達人」、「吉他英雄」等音樂娛樂類App不同的是，Playnote是一款專業的音樂互動軟件，專為參加ABRSM（英國皇家音樂學院考試）、澳洲音樂考試委員會以及加拿大音樂學院考試的朋友研發的創新音樂應試工具。香港演藝學院音樂學院教授張佩珊說：「音樂和科技結合得好的話，將會掀起一場新的音樂教育革命。」

目前Playnote在全球範圍的下載量超過10萬，產品主要靠用戶購買試題的方式盈利，目前一到八級的題庫已超過2000題，按每組60題收取98港元。

「產品針對目標很明確，價格比私教課堂便宜很多的，會是一盤很好的生意，」張佩珊補充道。準備參加明年1月份ABRSM樂理考試的Jacky說：

「對我們來說價格比較吸引。我們上一節課45分鐘，通常需要花費300至400港元，但在Playnote上花幾十元就能練好長時間。」

Playnote這場音樂教育革命繼續進行，容志偉透露，下一代的Auralbook更全面，將實現軟件能教學生彈奏鋼琴、吉他等樂器的目標。這個新產品最快要等到明年才能面市，因為要編寫基於全球各音樂學院考試大綱的各級別版本，人力耗費和工程量巨大的同時，這個新產品在技術要求上比第一代Auralbook高不止一倍，比如說學生彈奏複雜、多音軌的音樂片段後，需要Auralbook展現極高的收音敏感度和精確的分析能力，快速把握每個音調，節奏，輕重甚至是感情處理，這一切極具挑戰。容志偉表示Playnote下

一步要做到，即使是面對一份複雜的樂譜，用戶也能通過Auralbook獲得專業的音樂指導，為應試的朋友找到最佳的音樂伴侶。

或許一聽「應試」讓人覺得枯燥，但這位熱情友善的音樂老師卻會根據學生的表現而產生不同的反應。表現好她會毫不吝嗇地稱讚你，當然，如果你亂來她也會毫不留情地罵你：「Hey，你到底在唱什麼？再來一遍！」之後會幫你分析正確答案的原因，有時還會像Siri一樣給你意想不到的回答。容志偉表示團隊光是研製這些妙趣橫生的對話就花費了不少心血：「在做這個App的時候我們已想到所有不同的可能性，」力證她是位不僅專業，而且還「有血有肉」的音樂老師。Auralbook的核心競爭力在數字信號處理、人工智能和雲端計算、敏感精確的分析系統以及龐大的題庫，為學習音樂的學生、教師、學校和專業機構提供創新的音樂研究方法。

音樂是藝術，軟件開發是科技技術，當今科技發展讓更多井水不犯河水的事物融合在一起，形成有趣的結合。容志偉在香港科技大學電子工程學院就讀時，主要研究音頻信號處理和人工智能，多才多藝的他酷愛音樂，自1997年起就是歌劇男高音和樂隊指揮，還擔任過私人鋼琴和聲樂導師。與此同時，容志偉早在大學時期就開始創辦公司，十幾年來已在多家科技公司擔任過高級管理，其中包括**幻音數碼**和**飛利浦**電子公司等。Auralbook得到良好的市場反應，同時也屢獲大獎，其中包括亞太區具代表性的 IT 獎項 APICTA「最佳創業公司」以及「最佳電子學習（eLearning）」優異獎。

但是，獲得良好市場反響和獎項的同時，容志偉也有不少顧慮：「在這

一刻，我知道有人一直在看我們怎麼做，並想抄襲。」對於Auralbook，容志偉用心良苦但也很倍感自豪：「一般來說，有專業內容和想法的客戶會把產品交給開發商去做，而會搞技術的卻沒有專業的樂理知識和音樂教學的實戰經驗，」Auralbook從內容到技術都不經外人或外判商研發，即使投入大、歷時長，容志偉團隊也力求一手包辦，所以Auralbook從題庫內容編寫、軟件開發到市場推廣營運都是公司「一腳踢」。

「另外，除了想先觀察IT和音樂這樣的融合是否ok，他們還在琢磨這個市場的餅到底有多大，」容志偉表示，他們一方面要做到防止別人抄襲，還要把這塊餅做得更大，這也是他為什麼要堅持走專業路線，不迎合大眾開發音樂娛樂類App的原因。

英國皇家音樂學院考試聯合委員會在全球九十多個國家設立音樂考試機構，每年參加考試人數超過63萬，這個數字大且穩定。張佩珊表示：「這個產品做到專業的同時，從某種程度上也是大眾化的，保證了市場的需求量。」

教學經驗超過10年的私人鋼琴老師Daisy Chan則認為：「師生面對面的教學方式雖然價錢相對較貴，但暫時還是無可取代的，另外用這類軟件學習對學生的自制力要求也很高。」對此，容志偉表示能把兩種教學方式結合在一起，老師通過查看學生練習記錄和答題成績來分析學生的學習程度，因材施教。

「科技為教學的實際需要提供了多一個選擇，對音樂界來說是件可喜的事，不過仍需要時間證明，」張佩珊說。——葉帆

總之 人工智能音樂老師 Auralbook 的出現，給學習音樂的用戶提供了專業、創新的研究方案，並掀起了一場音樂教學革命。