



Artificial Intelligence trend in Korea

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Introduction

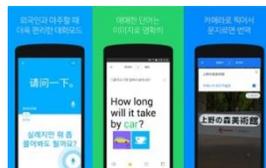
Two years have passed since the Go match between Sedol Lee and Alpha Go. The match of the century created a sensation around the world and has caused enormous impact on the development of Artificial Intelligence (AI) and the 4th industrial revolution. Korea as well is promptly coping with the new trend, and various industrial sectors are actively adopting the AI service into their businesses. Not only are the ICT companies, but also are the financial, medical and law firms actively accepting the AI technologies.

AI Interpreting services

Korea's number one portal site company called Naver has successfully launched their AI interpreting service application called Papago. This application was launched right before the Pyeongchang Winter Olympics and have already reached 10 million downloads. The interpretation service applies an artificial neural network, so it can understand the context, difference of meaning, words and word orders by itself.

One of the world renowned research institutes called Electronics and Telecommunications Research Institute (ETRI) and a Korean office suite software developer called Hancom have also jointly developed an AI interpreting service called Genie Talk. The service can recognize the text, voice and Optical Character Reader (OCR) of nine different languages: Korean, English, Chinese, Japanese, Spanish, French, Russian, German and Arabian. Aiming especially for the Pyeongchang Winter Olympics period, one of the features of this service is a full database of Pyeongchang region's local products and foods (that cannot be easily translated in to other languages), names of athletes and sports terminologies.

Because of the Neural Machine Translation (NMT) technology, the translation service can understand the word order and context of the sentences. Therefore, the translation becomes more natural and can overcome the mistranslation when translating the less frequently used sentences.



<Papago service. Source: Naver>



AI Speakers

Apart from the Google Assistance and Alexa, there are five more AI speakers developed solely in Korea. One of the leading electronics companies, LG Electronics, the two top internet companies Kakao and Naver, and the major telecom companies, SK and KT, have developed AI speakers.

The first company which launched the AI speaker in Korea was SK telecom. SK's AI speaker, Nugu, can provide daily information, time, weather and music, and it can also be connected to a smartphone and TV to verbally control these devices. KT's AI speaker called Giga Genie provides similar service as the Nugu. However, the most distinctive feature of Giga Genie is that the AI speaker has a camera which can lead to a video call by connecting with the TV screen. SmartThinQ which is developed by LG can be connected with home appliances (washing machine, refrigerator and air conditioner) which have IoT sensors. Especially, LG is highly focusing on AI development. The company even has recently opened an AI R&D center to establish an AI hub platform covering the entire LG Electronics products.

Although Samsung has not yet launched their AI speaker yet, they will jump into this business in the second half of this year with the name of Bixby. In order to do so, Samsung already has acquired an AI startup called VIV Labs which the founder was the former developer of iPhone Siri. While Siri has limited service to connect with some applications, the characteristic of VIV Labs development is that they thrive for an open AI platform. During the Mobile World Congress 2018, Samsung has announced that they will provide a beta version of open AI platform which can be shared with 800 different companies to apply it into their products and service.

				
LG Smart thinkQ	Kakao Kakaoi	Naver Clova	SKT Nugu	KT Giga Genie

<Local AI speakers in Korea>

AI in the financial industry

The application of AI in the financial sector is growing as time goes by. The most frequently available services are loading the AI algorithm into the remittent, pension and asset management. Shinhan Bank was the first company in Korea to introduce the AI platform to general public. They have adopted a Chatbot which can provide 24 hours services of answering simple questions. After all, through the machine learning process, the bank will create an AI bank clerk which can proficiently provide services to the clients.



KEB Hana Bank introduced a service called Pension Hyrobo which can manage the pension asset via the website and mobile application. It can also diagnose the achievement and risk of the one's asset portfolio by examining his/her investment tendency.

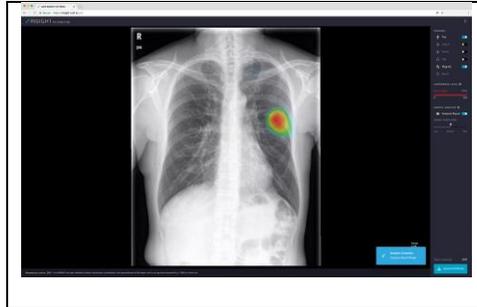
KB Kookmin Bank is providing a private banking service using the AI algorithm. It provides a tailor made portfolio by analyzing the client's investment tendency, size of the investment, preferred investment region and so on. The bank can give the optimized portfolio for clients with their developed system.

AI in medical sectors

In the medical sectors, AI services are applied to telecare services and X-Ray image interpretation. SK C&C, a Korean IT company, is developing an AI Aibril healthcare management program for the AIA insurance company. The two companies have promised to jointly develop a digital total healthcare platform using the AIA Vitality, a wellness program that is available as a mobile application helping users to make a healthy choice. The result of this development will benefit both the users and the insurance company by optimizing the insurance calculation and strengthening the risk management.

Major Korean hospitals are competing to strategically establish an image big data station. Korea University Hospital in Guro has recently opened a KU-Medical Image Data Center. Yonsei Medical University has opened an image Data Center. Seoul-Asan Hospital has opened Asan Image Metrics. Catholic hospital also has established a Catholic Smart Imaging Bio Bank (CSIB). Although their names are all different, basically Korean hospitals are aiming to quickly adopt the AI solution in order to increase the accuracy of diagnosing diseases.

One of the successful examples of the application of X-Ray image interpretation is a company called Lunit. It is a venture company established in 2013. As a startup, the company was the only Korean company which was selected as one of the top 100 global startup companies by the Startup Analysis organization called CB Insight. The company has developed Data-driven Imaging Biomarker (DIB) software which can accurately decipher medical images using the AI technology. DIB helps the doctors to accurately diagnose the breast cancer and tuberculosis by utilizing 100 thousand X-Ray image and biopsy video images to learn how to objectively decode the diseases. The accuracy of its technology hits more than 90%. In result, Lunit has made a contract with Samsung Hospital to jointly develop the AI diagnosis assistance program. Through the deep learning process, the developed software will enable to support doctors to diagnose breast cancers and colorectal cancers.

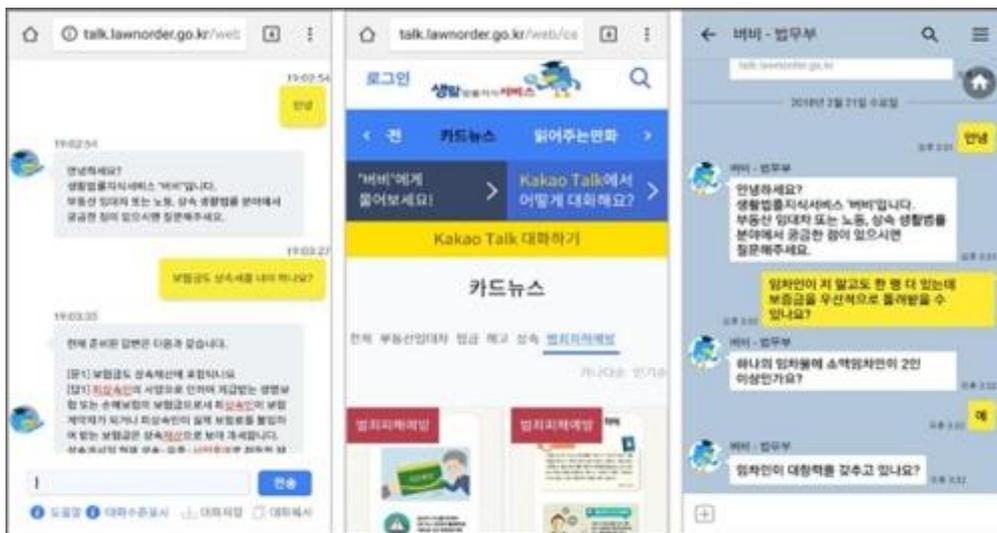


< Lunit software. Source: Lunit >

A local startup called Vuno Korea has developed a bone age decipher program. This Bone Age decoding program reads the data of bone density measurement results and bone age information. This system has dramatically reduced the time to diagnose the bone age which can predict the maximum height that a child can expect in the future. Furthermore, Vuno’s AI program can also provide information of children what is their expected height when they become adults.

AI in law firms

Korean government is also adopting AI solutions in their services towards citizens. Ministry of Justice has recently launched an online chatbot service called Bubby. Bubby provides law information on real estate, lease, layoff and inheritance. User can ask questions about those four different topics. Based on the inputs that are already given, Bubby will be able to find answers for the questions and will provide the feedback to the user.



<Bubby chatbot image. Source: Yonhap News>



DR & Aju Law firm has introduced intelligent legal information system for the first time in Korea. This AI system is developed by a Korean startup called Intellicon Meta Lab. This startup ranked first for the second straight year in the 'Competition on Legal Information Extraction/Entailment (COLIEE)' in 2016 and 2017. A person who does not know any legal terms can write a sentence and an expression in this system. It will automatically understand the meaning and will change the word expressions into legal terms. This natural language process was developed based on the deep learning technology and hybrid algorithm as well as the feedback given by the lawyers. It not only gives information on legislation and precedents, it also provides visual image of the results.

Other sectors

Food & beverage industries are also actively adopting AI solutions. Some companies started to launch a chatbot service in the messenger service to observe the trend and further to develop new tastes that consumers might like. The service is available 24 hours and can respond immediately, so the company can promptly receive consumers' feedbacks toward new products. One of the examples is that a F&B company called Lotte has made a contract with IBM in 2016 in order to adopt the AI system to analyse the consumer trend and preferences. In result, they have come up with two Pepero products (see figure below) with the taste of Cacao nips and calamansi. The AI system has collected and analysed 10 million social media postings to determine consumers' preferred tastes, texture and ingredients. By doing so, the system came up with these two products that are most possibly preferred by the consumers.



<Lotte's new Pepero products with the cacao nips taste and calamansi; Source: Lotte >

Conclusion

The craze for the AI will continue for a while in Korea, and the cross sectoral collaboration will become more vibrant. However, the fever will most likely remain in Korea as the developed technologies are based on the Korean language. It might be less competitive to bring these technologies to the global market. It is necessary for Korean developers to think about the language, as this can become a barrier to enter global market. Therefore, the development of translation technology like neural machine translation will play an important role in the AI world. In addition, there is lack in conversation on the



ethics issues in the AI industry. No consensus made in the society to deal with the AI ethics. Also, AI is software that is only operable online, so it is vulnerable to be hacked. Especially, in the financial sector, the risk is even higher. For this reason, there will be a chance for the Dutch companies and organizations to collaborate with Korea.

Source

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