

The Importance of AI Reliability in the Age of Generative AI

Generative AI refers to a model that generates new pictures, new written answers, and new music based on big data or after being asked a question. ChatGPT is a system that provides written answers based on questions and answers, and when you enter pictures or data as input, it automatically analyzes them and provides answers in tables or graphs. It is a kind of intelligent system such as artificial intelligence and robotics, and because it understands speech and answers well, it has become possible to automatically perform automatic translation, meeting minutes, document summarization, and basic research. Therefore, it has a great impact on people's lives, which is why it attracts a lot of attention.

#Generative AI #Big data #ChatGPT #AI #Intelligent

I think that systems like Google and ChatGPT are already surpassing human capabilities in certain tasks, and I think that in the future, AI systems may even surpass humans in certain intellectual capabilities. And that people and organizations that want to have a greater impact on people will be more successful in reaching a greater number of people. For example, there's a story about how Youtube keeps providing videos that people like and become addicted to so they don't leave. But it's hard to imagine that these things have the multidimensional intelligence that humans have, and more importantly, while these AI systems seem to be good at learning and responding to people's wisdom, it remains to be seen if they can understand and respond to even the simplest questions. When the problem changes just a little bit, or requires a little bit of new thinking and perspective, AI often still has a hard time adapting.



The problem is that there are many things that the ChatGPT developers don't understand exactly why they give the answers they do in certain cases, so they don't know how to get good answers yet, so there are many attempts (e.g., Prompt Engineering) to try to get good answers. Personally, I don't know how it works, so I think it's only a short-term solution, and I think it will evolve in the future to better utilize the principles of learning and answering, so that people can comfortably ask questions without prompt engineering and comfortably provide accurate answers.

The process of creating bias, privacy, and ethical AI in generative AI is called AI Alignment, which is the ethical alignment of AI with humans. Reinforcement learning is one way of post-processing to encourage safe responses. This can be done in a variety of ways, including removing harmful data from the training data at the source, or looking inside the trained model to prevent it from triggering harmful content. There are many examples of generative AI being used in the enterprise world, where companies are moving towards using generative AI to guide responses to new hires or first-time customers, reducing simple repetitive tasks. I think services like Jarvis from Iron Man, where you have higher-level capabilities where you can literally understand a person's intent and provide them with information, I think that's where generative AI is going to do well.

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removing harmful data from the training data at the source, or looking inside the trained model to prevent it from triggering harmful content. There are many examples of generative AI being used in the enterprise world, where companies are moving towards using generative AI to guide responses to new hires or first-time customers, reducing simple repetitive tasks. I think services like Jarvis from Iron Man, where you have higher-level capabilities where you can literally understand a person's intent and provide them with information, I think that's where generative AI is going to do well.

Meanwhile, generative AI can be useful in everyday life, but it still has its weaknesses. For example, when a company opens a new branch, it is not yet good at checking the marketability or reaction of the area. It is necessary to know the marketability and characteristics of the area (local information) and make a prediction of what will happen in the future, and this information and ability does not yet exist. I think other services such as Google and Naver may be stronger in local information, and I think a company that specializes in prediction may be stronger.

However, the pace of AI development is so fast that there are many voices that we should create an organization like the IAEA to monitor and verify how AI learns and how it can be misused, or whether it uses personal information without permission. Personal data and unwanted automation are currently regulated by the EU's General Data Protection Regulation (GDPR), under which high-risk AI (e.g., personnel assessment, credit rating, personal data, autonomous driving, healthcare, and infrastructure) can be fined up to 6% of global revenue if it cannot transparently explain its learning process and decision-making. The first version of an international standard for AI explainability will be released soon, led by Korea.

In the future, we expect to see more services that leverage the intelligent language understanding capabilities of these generative models while ensuring that key data does not leave the enterprise. However, many of these services may not be much different in functionality from traditional enterprise search services. Of course, productivity can be greatly increased, but I think it's best to approach this with small pilots rather than overly optimistic expectations, and to think of AI advances as the result of many prediction, classification, and optimization systems, such as AlphaGo, a representative of reinforcement learning, and ChatGPT, a conversational system, being selected and applied.



When complex AI systems are used for particularly important tasks, explainability is needed to present the key factors that played a role in the AI's decision making. The basic role of Explainable Artificial Intelligence (XAI) is to select these key inputs and make them known, as well as to find the entities that play an important role in them, not just the inputs, and to correct the reason for the wrong decision.

Reference

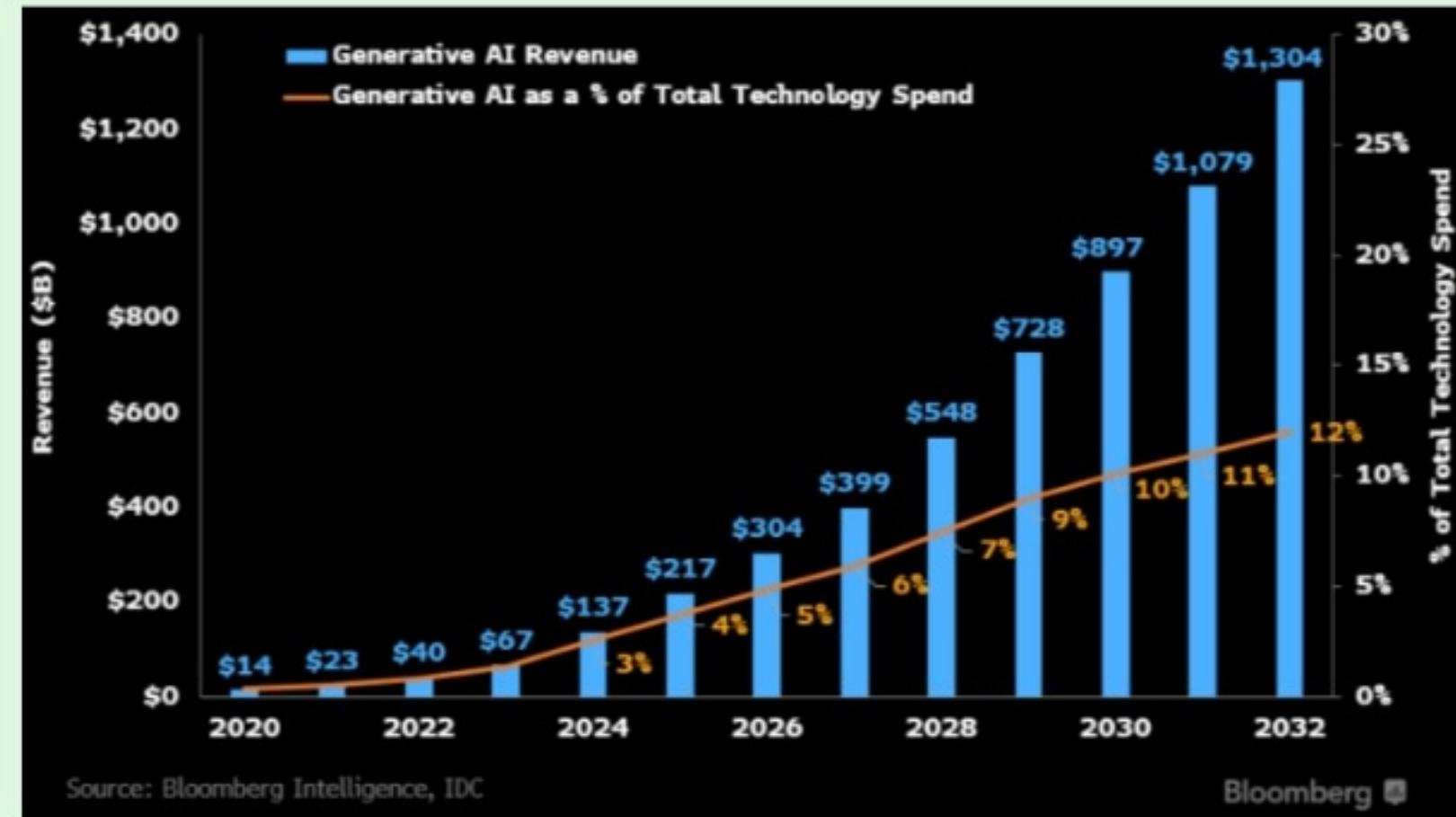
- 국내 XAI 대표 기업 '인이지', KAIST와 세계 최고 수준의 인공지능 의사결정 설명기술 개발
- KAIST, AI학습모델 오류 수정 기술 개발

The Use and Future of Generative AI

According to market research firm Grand View Research, the global generative AI market is expected to grow at a compound annual growth rate of 34.7% from \$10.1 billion in 2022 to \$109.3 billion in 2030. According to Bloomberg Intelligence, an economic research organization within Bloomberg, the expansion of the generative AI market will drive demand for the infrastructure needed to train AI systems, AI advertising, and more. The AI model training infrastructure alone is expected to reach \$247 billion (KRW 324.1875 trillion) by 2032, the AI-enabled digital advertising business is expected to reach \$192 billion (KRW 252 trillion), and the AI server market is expected to reach \$134 billion (KRW 175.875 trillion).

- #LLM(Large Language Model)
- #FinChat
- #Deep Learning
- #Life sciences
- #Emotional state monitoring

1. Informational and conversational use



Generative AI Industry market forecast / source : bloomberg intelligence

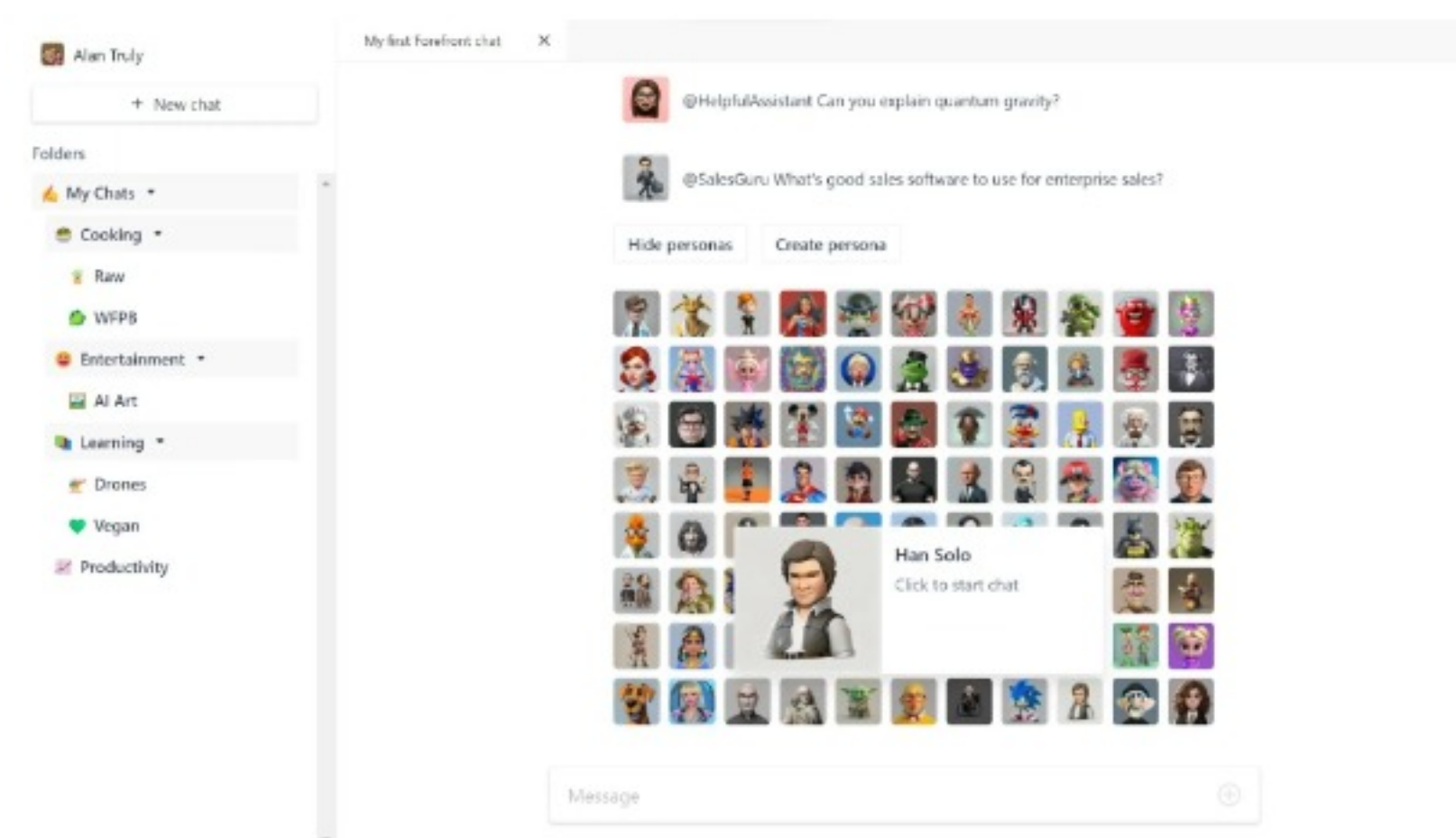
Recently, many companies have been using natural language processing technologies such as ChatGPT as chatbots to improve customer service, increase efficiency, and enhance user experience. Chatbots can be used to provide a variety of services, from customer support services that can quickly respond to customer inquiries 24 hours a day, 365 days a year, to information services that provide real-time information such as news, weather, and stock quotes, or search for information on specific topics, to restaurant reservations, flight bookings, and product order fulfillment.

Digital people can also be developed to interact with users and provide services in a variety of applications, including virtual characters, interactive AI, and learning tools. For example, virtual characters based on the Large Language Model (LLM) can be implemented as digital humans that speak and interact naturally with people, or as digital assistants that manage personal schedules, assist with tasks, and provide information.

Emotional state monitoring and advisory services are also possible. By using LLM models to analyze users' text-based conversations, it can be used for emotional state monitoring to detect emotional changes, emotional state monitoring to analyze users' conversations and suggest advice or treatment for emotional problems, or as a self-help tool to help patients manage and treat their own mental health.

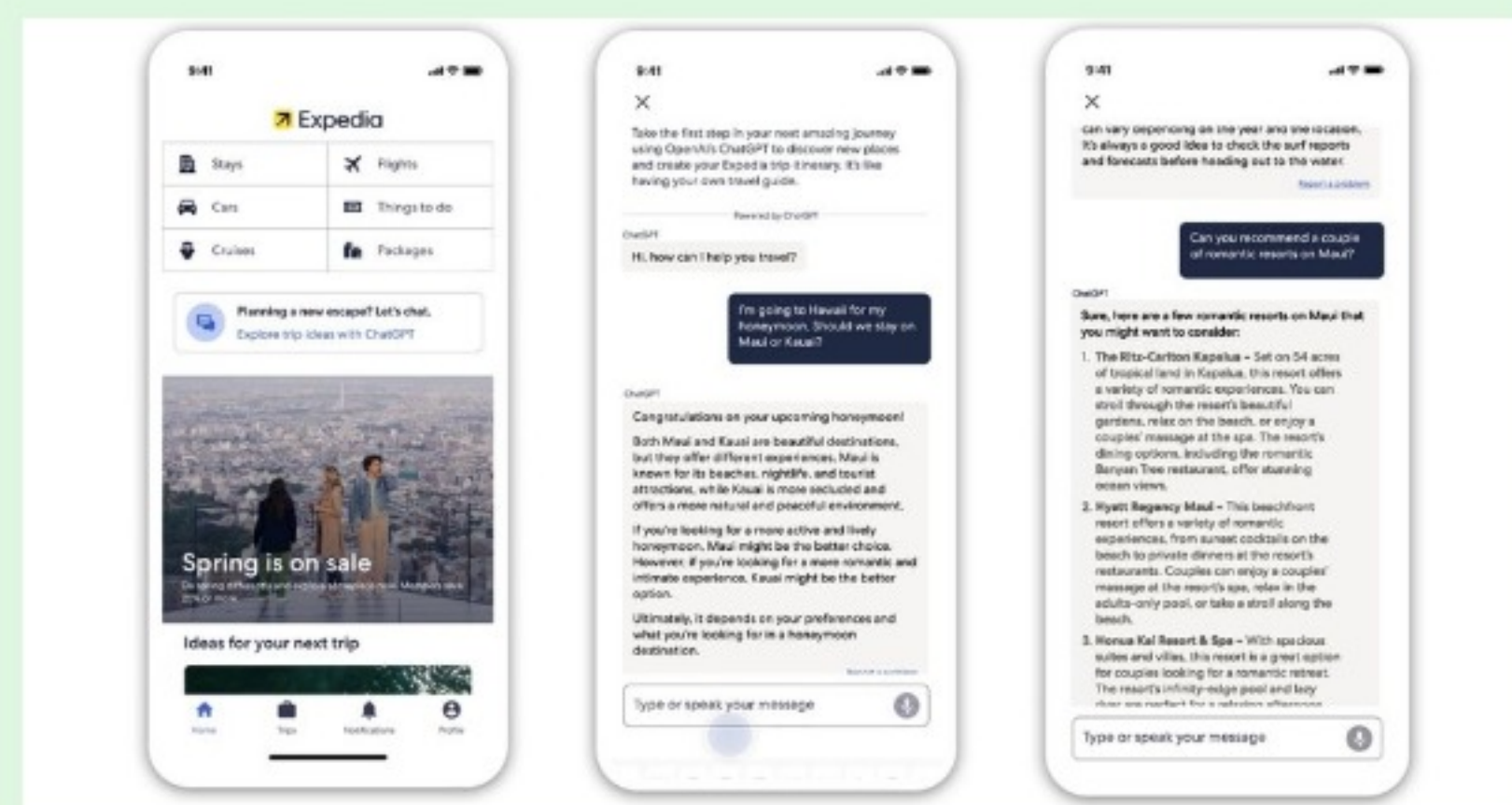
Forefront Chat

This is a popular chat service that is also a free GPT-4 service. When you can't talk to your family or friends, you can chat with anime characters, historical figures, and experts and researchers for knowledge and advice. You can choose a character to talk to and even create a picture.



Forefront Chat / source : Digital trends

2. Use in tourism



Expedia / source : technology records

From booking accommodation and transportation, to suggesting itineraries based on travelers' interests and schedules, to recommending sights and restaurants, to acting as a multilingual translator and guide to help foreign tourists communicate with each other.

Expedia

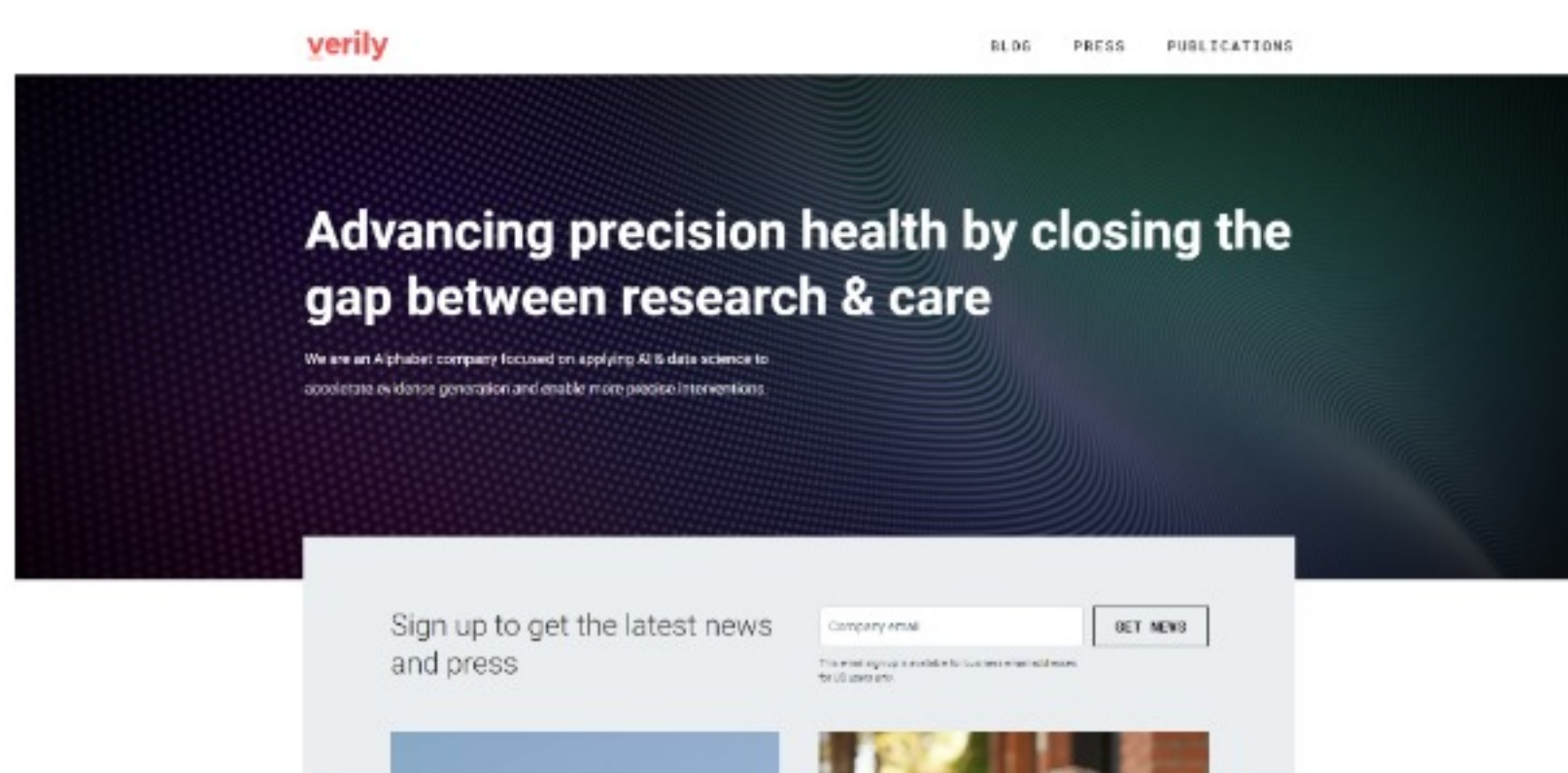
On April 4, Expedia announced the beta launch of a new in-app travel planning experience powered by ChatGPT. Expedia recently built a plugin for ChatGPT that allows travelers to chat directly on the ChatGPT site and developed a platform that recommends flights, car rentals, and accommodations, as well as where to go, where to stay, how to get around, and what to see, based on their chats. AI and ML provide personalized and relevant travel options from 126 trillion variables such as hotel location, room type, date range, price point, and more. For air bookings, Expedia's extensive flight data, AI and ML are used to compare airfares with historical prices and track price changes so you can make informed purchases. The collaboration with OpenAI is currently in beta testing, and Expedia says it will evolve quickly based on how members interact with it.

3. Medical applications

It is used as a tool to assist doctors and nurses in diagnosis based on a patient's symptoms, as an aid to their work, and to improve communication with patients. It helps medical staff to provide diagnosis information to the doctor or nurse based on the patient's symptoms and records. Healthcare providers can use ChatGPT for additional decision support. By analyzing various data such as medical articles, patient records, and test results, they can analyze a specific patient's condition and suggest treatment.

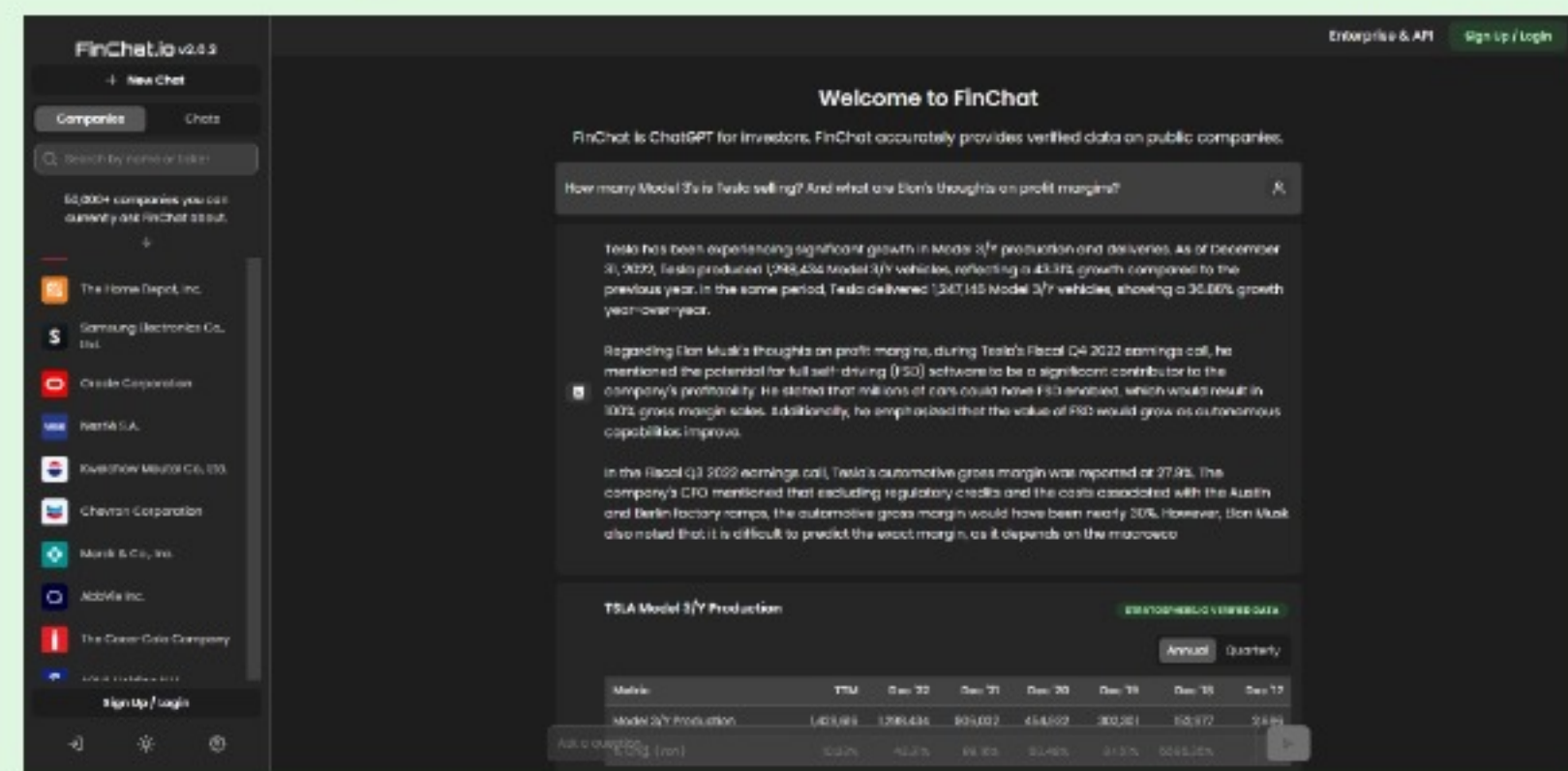
Alphabet Verily

Verily, part of Google's parent company Alphabet, uses AI in healthcare and life sciences to improve healthcare. Verily uses AI to interpret medical images such as X-rays, MRIs, and CT scans to predict a patient's health, and to analyze genomic data to identify patterns of disease in individuals. The resulting patient data and medical records are analyzed to create a personalized healthcare plan.



Forefront Chat / source : Digital trends

4. Financial applications



FinChat / source : FinChat.com

ChatGPT is used in various fields such as customer service, product marketing, data analysis, and security enhancement. It can be used for customer service, including analyzing various financial data such as financial market trends, stock price forecasts, and investment recommendations, as well as virtual financial advisors who provide advice on investment strategies and financial product recommendations on behalf of customers, providing information on various financial products, and recommending products that fit customers' financial situations. It can also be used to detect and prevent fraud or abnormal transactions by analyzing financial transactions and behavior patterns, and to enhance user authentication and security during financial transactions.

FinChat

FinChat is an AI-powered chatbot service for the financial industry that allows users to ask and answer questions about public companies and investors. It is designed to provide an easy-to-use, AI-powered chatbot interface for users who need quick and accurate answers to financial questions in the financial industry. It provides information on more than 750 companies, including household names like Apple, Microsoft, Amazon, and Alphabet, as well as data on gross margins, production, and shipments, and provides specific metrics for specific companies. It provides financial analysis for investors and analysts to examine a company's financial position and performance, and visualization data for financial professionals to understand real-time industry trends and indicators.

5. The Future of Generative AI

AI has dramatically changed our daily lives, moving us from the era of "search" to an era of recognizing people who are good at asking questions. However, various questions have been raised about AI. According to experts, there are concerns that the information learned by ChatGPT may contain unverified facts, causing the phenomenon of hallucination. In addition, while data collection and statistical analysis can be beneficial, the vast amount of data collected to train the system contains personal information, which can have negative privacy implications. In fact, there have been cybercrimes in Israel where ChatGPT has been used to write malware and send phishing emails. In education, ChatGPT has also been used to plagiarize assignments and cheat on online tests. There are also concerns about AI replacing human jobs. There is no doubt that AI is changing lives in a positive way, producing new and creative results based on user needs in finance, education, healthcare, tourism, and more, and ideas and improvements on how to optimize and use it in industry will continue.

Reference

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Prevent accidents with 5G-based industrial safety solutions



ITS Room

Core Technologies and Achievement Highlights

- Detect and take actions in advance and in the shortest time for fires, accidents, and breakdowns at multiple industrial sites
- Multiple current predictive maintenance patents (137 domestic patent applications, 82 registrations / 133 overseas patent applications, 39 registrations)
- Selected as a public safety agency for the '5G mobile communication convergence service demonstration project' by the Ministry of Science and ICT

Safety and productivity at the same time with predictive maintenance system



Predictive maintenance relay EOCR UYeG-SE

Foresight is the ability to foresee the future. Then, what if there is a prognostic system that predicts and notifies sudden accidents and failures at industrial sites? Accidents can be prevented including various losses caused by machine stoppage. ITS Room Co., Ltd. was established in 2001 as an industrial solution and software development company. Over the past 22 years, it has developed current-based predictive maintenance sensors and related solutions, cloud-based web/app solutions, algorithms such as facility health index remaining life span, and current-based predictive maintenance software for big data management. In particular, it has established itself as a leading predictive maintenance company in Korea by identifying the state of facilities with the flow of electricity, managing breakdowns and accidents, and developing technologies that can even save energy and applying for domestic and international patents. The field of predictive maintenance has developed through post-maintenance that performs repairs after a breakdown, preventive maintenance that requires periodic inspection, and condition maintenance that checks and repairs the condition of equipment. It predicts abnormalities through data such as characteristics, status, and history of equipment. It not only prevents accidents by recognizing failures or abnormalities in advance but also enables efficient management such as cost reduction. As a result, the market, which was valued at 4.2 billion dollars in 2021, is expected to grow to 15.9 billion dollars in 2026 due to high preference in the industrial field. In addition, unlike acoustic and vibration analysis that requires specialized personnel, it can be spread and expanded at low cost and can be applied to a wide range of fields such as machinery, electricity, and facilities.

Provide customized services in a differentiated way



ITS Room challenged itself with the ICT Funding Project to maximize innovation capabilities and advance into new industries. In particular, as safety accidents continued to occur in the construction and industrial fields, there was an opportunity to establish realistic countermeasures in line with the 'Serious Accident Punishment Act' that came into effect in 2022. The establishment of leum 5G-based industrial field digital safety platform and demonstration of subscription service in industrial complexes implemented by ITS Room is an initial infrastructure construction and convergence service model in response to the rapidly growing leum 5G market. The company is contributing to the development and demonstration of an initial market creation model that meets the government's policy measures. In addition, by demonstrating the effectiveness of the entry-level 5G-based ICT safety management system for small and medium-sized enterprises, it established a digital safety platform for 150,000 resident companies in industrial complexes nationwide to provide specialized 5G/cloud-based entry-level industrial safety subscription services. Since the introduction of the actual service, the time required for accident occurrence and initial response has been reduced by more than 60%, and it is now possible to respond immediately within 0.1 second in emergency situations such as entrapment. The company has built a purpose-fitting industrial environment with solutions tailored to different field conditions, and which is also helpful in improving productivity. This achievement is also meaningful as it secured the safety of small and medium-sized enterprises and demonstrated the excellence of the leum 5G network and convergence service.

Consistent momentum in advanced technology

Since safety accidents at industrial sites are directly related to the lives of workers, accident prevention must be strictly managed. As such, it is essential to maintain related data management, accuracy, and speed, and a solution suitable for the environment must be provided. Inevitably, however, there is reluctance to pay for the expensive 5G connection network installation, but if several companies jointly install it in a grouped area (industrial complex, business district, etc.), the burden can be reduced. Currently, sales are actively underway, with the range of installation expected to expand as corporate awareness changes and publicity spreads. In addition, ITS Room Co., Ltd. is building differentiation for industrial safety prevention based on its experience in supplying industrial safety solutions using 5G connection networks to companies in the Banwol Sihwa Industrial Complex. As the company is accelerating its efforts to apply the world's first commercialized 5G-based industrial safety solution quickly in overseas markets, it is expected to advance into the world beyond the domestic market.

For a safe industrial site, everyone's attention is necessary!

ITS Room has only one final goal: to create a safe industrial site where no one gets hurt. To this end, continuous interest from the government and industrial sites is needed to create various businesses and services based on AI and data. Services provided on a one-time basis are likely to be overtaken by leading technologies or to lose momentum. Steady interest and support are essential to keep up with advanced technology. In order for a car to run well, a well-made road is needed rather than an unpaved road, and good measuring equipment is helpful for accurate medical treatment. As such, we hope that the 5G infrastructure network which is the basis of customized solutions will be well-established so that various companies can utilize the technology created by ITS Room.

ICT Funding Project

- **Dedicated Institution** National Information society Agency
- **Business Objective** Discovery of 5G convergence services and public-leading applications (informatization)
- **Business Description** Discovery of 5G convergence services and public-leading applications

Company information

- **CEO** Lee Younggyu
- **Type of Business** Wire communication equipment manufacturing
- **Year of Establishment** 2001. 05
- **Website** www.itsroom.co.kr

TIME LINE



Machine vision technology that expands to all directions by going beyond the smart factory



L-Light Co., Ltd.

Core Technologies and Achievement Highlights

- Possessing technological prowess for high-brightness, high-speed vision inspection system technology based on LED lighting Over Drive Pulse (ODP) (selected as a hi-tech company)
- Smart factory advancement, enhanced competitiveness of vision solutions related to inspection automation, and expansion to new markets such as secondary battery roll-to-roll inspection
- Expanding the industry applied with vision inspection by commercializing software that collects and analyzes high-speed video big data from track facilities

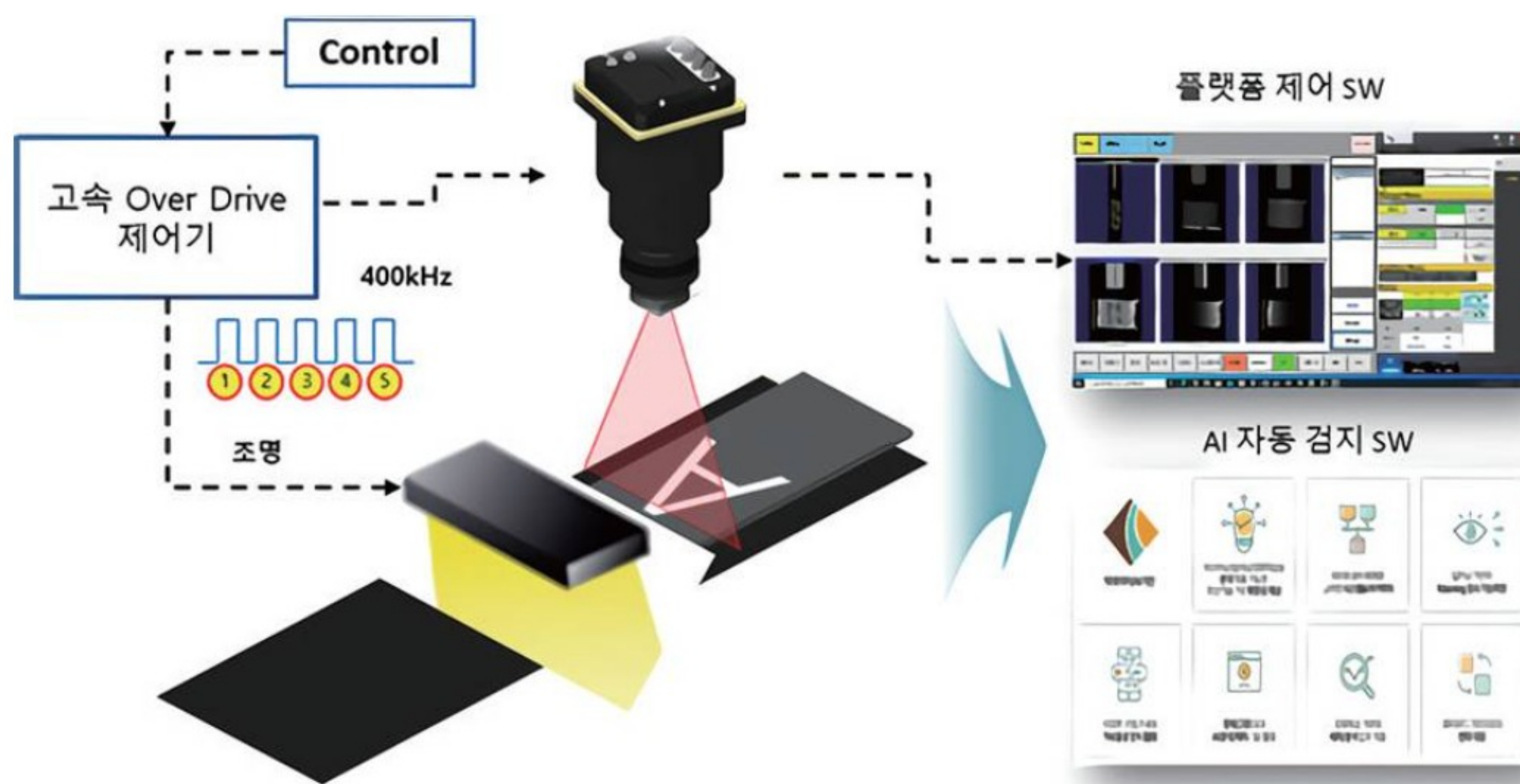
A leader in the machine vision market that has grown with continued R&D



Checking samples of orbital facility imaging

The importance of machine vision technology is further highlighted due to the increased demand for smart factory advancement and automation. The reason is that machine vision technology integrated with AI can not only improve product quality and precision but also implement an advanced inspection system, which significantly contributes to production growth as well. The global market for machine vision is growing at an average annual rate of 12.3%, and it is expected to be valued at USD 41.6 billion by 2030. Machine vision technology is applied to various fields such as military, aviation, aerospace, national defense, and government application program, in addition to the smart factory. Established in 2012, L-Light Co., Ltd. specializes in machine vision system hardware that focuses on providing technological prowess and efficient solutions that can meet customer-specified requirements and deadlines. L-Light has original technology related to vision image acquisition based on machine vision optical technology and system technology for controlling the vision lighting power using the Ethernet network. L-Light is leading the machine vision market by providing its proprietary technology to various industries such as display, semiconductor, and secondary battery. Nowadays, L-Light gives an impetus to technology development in order to apply vision image acquisition technology to tunnel crack and railroad rail inspection, in addition to the manufacturing process in the industry.

High-speed, high-brightness lighting system applied to the public sector



High-speed, real-time image acquisition and AI detection platform concept

L-Light has experience in developing a platform that analyzes and learns AI images using big data obtained by inspecting tunnel cracks based on machine vision optical technology. L-Light obtained an opportunity to complete a railroad, bridge, and rail inspection solution by developing an emergency recovery system for Seoul Metropolitan Rapid Transit Corporation and participated in the ICT Funding Project to apply the experience of machine vision original technology to the public railway field. The SW convergence product commercialization project that L-Light participated in is part of the 'SW convergence cluster 2.0' project managed by the Ministry of Science and ICT and intended to enhance the competitiveness of related fields and create new markets and new added value by supporting the SW convergence product and service development of SW and ICT companies. While implementing the support project, L-Light sought to commercialize a platform that detects the risk factors of track facilities in real time and at high speed and analyzes image data using AI by making use of display lighting technology. The excellence of L-Light's technological prowess lies in the fact that L-Light can produce the maximum amount of light in a short period of time. In other words, the core product of L-Light is the high-speed, high-brightness lighting system that films videos at high speed by maximizing the light of the moment in a bright or dark place. After filming videos, L-Light analyzes and learns saved images to identify abnormal images. As filmed videos are manually transferred and learned, it is necessary to transmit videos over the network and supplement learning automatically. Also expected to be developed in the future is real-time detection technology that detects abnormalities while video shooting by developing a process that transmits the learned data to the filming device.

Confirmed the possibility of machine vision technology!

L-Light could expand machine vision technology to structural inspection in the public sector by participating in the ICT Funding Project. L-Light maximized the business efficiency of public administration and secured the safety of railway service by developing and applying to the public railway field a platform that acquires images of track facilities in real time at high speed, analyzes high speed video big data, and detects abnormalities using AI. Other significant achievements include smart factory advancement, enhanced competitiveness of vision solutions related to inspection automation, and expansion to new markets such as secondary battery roll-to-roll inspection. Considering the achievements, L-Light could confirm once again that there is a high possibility of utilizing original technology related to machine vision.

Efforts to maximize the efficiency and productivity of the manufacturing process

L-Light plans to advance vision system products in other business areas such as displays, semiconductors, and secondary batteries using the core technology of the high-speed, high-brightness lighting system in order to maximize the efficiency and productivity of the manufacturing process. L-Light also devised a plan to develop a platform suitable for the GTX line which is scheduled to open in the future by expanding the area of track facility management field in Korea in order to commercialize the platform developed during the project. L-Light also plans to expand the scope of platform development to the safety inspection of public structures, such as road ground inspection and bridge inspection using drones. A new era has dawned wherein machine vision can quickly and precisely replace product inspection in the manufacturing process and matters that should be directly seen and judged by human eyes. Machine vision has infinite possibilities as it can overcome and improve the limitations of the existing technology. We look forward to the next move of L-Light, which is truly dedicated to technology development.

ICT Funding Project

- **Dedicated Institution** National IT Industry Promotion Agency
- **Business Objective** S/W convergence cluster 2.0
- **Business Description** S/W convergence cluster 2.0

Company information

- **CEO** Lee Jeonghwan
- **Type of Business** Development and supply of machine vision lighting and controller systems
- **Year of Establishment** 2012. 8.
- **Website** www.l-light.co.kr

TIME LINE



Extreme immersion and vivid enjoyment! a world where imagination and virtuality become reality



NP Inc.

Core Technologies and Achievement Highlights

- Establishment and operation of Korea's first and largest XR dedicated stage
- Building a comprehensive XR production pipeline by establishing 'Real Peach', a production specialized in Unreal Engine
- Established YNC&S, a joint venture

Augmented reality (XR) that can be integrated with the metaverse



NP Inc. is a company that produces customer experience-based brand experience marketing and new tech content. Since its establishment in 2006, it has been in charge of brand experiences for leading domestic companies such as Samsung Electronics and Hyundai Motors. It also held large global events such as opening and closing ceremonies of the 2018 PyeongChang Winter Olympics, Galaxy Unpacked event, and final stage of the League of Legends World Championship. NP established NP XR Stage in March 2021 and expanded its business area as a new tech content company. In November of the same year, it established its subsidiary Real Peach and internalized the entire process of the XR content production pipeline, including planning, production, and filming. NP's XR content solution is a technology that utilizes LED-based tracking cameras and Disguise media servers to synchronize the background with people's movements, creating a sense of being immersed in a virtual space. This solution is designed to replace offline live experiences with virtual ones and is being increasingly adopted for offline events such as tour productions, concerts, immersive performances, and broadcasting sets. The rising demand for ICVFX production from global OTT companies like Netflix and Disney Plus further drives NP's growth in this field.

Obtaining opportunities to expand into the global market



Photo of onsite meeting with FrameMotion Studio in Malaysia

In their quest for market expansion using XR production technology, NP collaborated with the US multimedia solutions company Diversified and the Japanese branch of the global home shopping channel QVC in March 2021. Their primary target for global market entry was Southeast Asia, where there was high interest in XR content. However, XR production required filming in a specialized studio equipped with all the necessary XR-related equipment, posing challenges for overseas expansion. The cost of transporting LEDs, tracking cameras, media servers, and other equipment from Korea to overseas locations, along with installation and filming expenses, made it difficult to find companies capable of shouldering these costs. Nevertheless, given the growing demand for content production in the overseas market, finding a solution was imperative. NP participated in an ICT Funding Project with the goal of establishing a dualized pipeline where content planning and production would be handled by NP, while filming would be entrusted to a local studio. NP translated company introduction materials into English through the ICT Funding Project and met foreign companies 1:1 through local market research, expert consulting, and local business trips to conclude XR content production contracts. As a result, the 10th anniversary content of Philippine cosmetic brand BYS and the movie teaser of Malaysian film production company 100 Years Popcorn Production were produced as XR contents. Currently, NP is discussing various projects such as XR content production, XR studio establishment and operation agency, and joint R&D with 17 companies in Asia such as Japan, Hong Kong, and China including Southeast Asia. In addition, through the joint venture YNC&S, a new tech studio in the Uijeongbu Multi-Culture Convergence Complex (IDMC) is being built with completion targeted by 2026. To this end, it is expanding its ICVFX business.

A new leap forward with the world's attention on NP's technologies

In today's industry, there is a growing demand for ICVFX (Integrated Camera Visual Effects). With a focus on Asia's ability to produce high-quality content, Korea is considered a hub for content production in the region. NP is determined to establish a dominant position in the global market by advancing the technology of XR and ICVFX. To achieve this goal, NP actively monitors market trends and collaborates with domestic and international companies for joint research and development. This includes advancements in XR studio technology, expanding the application areas of XR, and enhancing the overall quality of content. NP is continuing the challenge of creating various environments beyond the metaverse of virtual space and developing content that allows new experiences in it. It is a business with great uncertainty, but the trend of the times is like that, and it is a market with great potential. In order to provide richer and more varied experiences with creative ideas and business models, NP plans to expand its capabilities in many ways in the future. This year, the COVID-19 pandemic has ended, and the offline market is being revitalized again. NP believes that this year will be the first year of a great leap forward when virtual reality and immersive content production technology can create synergy.

ICT Funding Project

- **Dedicated Institution** National IT Industry Promotion Agency
- **Business Objective** Reinforcement of Digital Content Enterprise Competitiveness
- **Business Description** Reinforcement of Digital Content Enterprise Competitiveness

Company information

- **CEO** Song Bangho, Park Jibok
- **Type of Business** Digital content development, advertising agency and promotion, brand promotion, sports marketing, Expo business, outdoor advertising
- **Year of Establishment** 2006. 7.
- **Website** www.npinc.co.kr

TIME LINE



Planning of diagnosis and treatment of individual patients optimized by AI

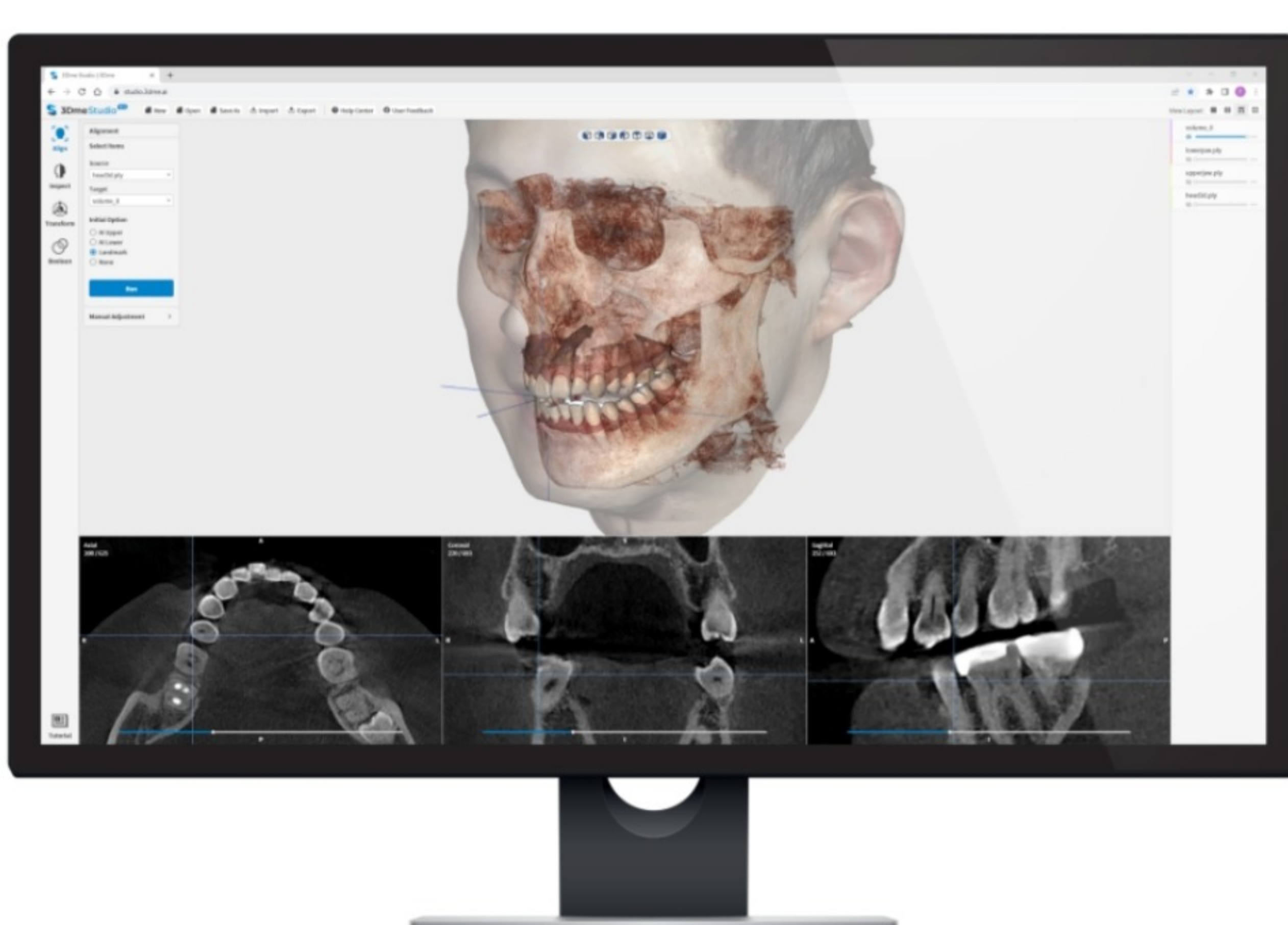


Imagoworks

Core Technologies and Achievement Highlights

- Development of the first AI- and cloud-enabled CAD solution for dental applications in Korea
- An inventory of intellectual property boosting company value and protecting proprietary technologies (80 patents pending in Korea and abroad; 23 patents registered in Korea)
- Development and technology transfer of an API with AI modules increasing technological capacity and competitiveness of the Korean AI industry

A trailblazer in the field of 3D modeling medical software



AI-enabled solution for fully automated alignment of dental 3D data developed by Imagoworks

The dental industry is experiencing a digital transformation with advancements in technologies such as 3D scanning, CAD/CAM, and deep learning. Digital dentistry companies are thriving, and their solutions are increasingly adopted, leading to the complete digitalization of dental clinics and laboratories. Alongside the rapid progress in dental hardware, there is a growing focus on innovation in dental software. One notable development is the integration of AI into dental software, aiming to streamline manual tasks and improve overall efficiency. AI is particularly being applied to software for diagnosis and treatment planning, with numerous companies worldwide already offering such services. Amidst the application of AI in the digital dental market picking up pace, Imagoworks is developed proprietary technologies in the field of 3D modeling medical software and pioneering the AI digital dental market with ingenious applications of AI. Since being founded in 2019, Imagoworks has worked with the finest talent in the field of medical imaging in developing technologies for 3D modeling, deep learning automation, and software-as-a-service (SaaS) which it transferred to numerous dental and medical companies around the world who were impressed with what such technologies can accomplish. Imagoworks has developed and commercialized the world's first-ever AI- and web-enabled 3D modeling automation solution for dental applications, revolutionizing not only the Korean dental industry which had been wholly dependent on foreign imports but also the global CAD dental software market. Said Imagoworks solution is at present in use in more than 100 countries.

Imagoworks' breakthrough in AI technology enhances Korean dental industry's competitiveness



CAD/CAM and 3D scanning technologies have rapidly advanced the digital dental industry. However, the diagnostic and analytical processes in dentistry often require a significant amount of manual clicking, leading to time-consuming procedures lasting from a few minutes to tens of minutes. This reliance on manual input introduces variations in the quality of dental work, depending on the experience and expertise of individual dentists and dental technicians. To address this issue, Imagoworks participated in the Korean government-run ICT Funding Project. Their goal was to utilize AI in the analysis of 3D patient data, including dental scans and CT scans, automating the process for improved quality and accuracy in dental treatments. By applying AI to these tasks, Imagoworks aims to enhance the efficiency, consistency, and precision of dental diagnostics and treatment planning, ultimately raising the overall quality of dental work. The Korean government is committed to technological innovation. The Ministry of Science and ICT runs the AI Voucher Program as a component of its Digital New Deal Initiative, supporting desiring SMBs and mid-size companies in adopting AI technologies as quickly as possible and AI solutions developers in market activities. For three consecutive years from 2020 to 2022, Imagoworks and its developments were endorsed by the AI Voucher Program, a sole achievement among a large pool of similar companies. Imagoworks, as a participant in the ICT Funding Project, successfully developed a technology that automates the manual work involved in dental diagnosis and treatment planning, which typically takes several minutes to tens of minutes. This innovative technology was supplied to companies and institutions seeking to enhance the quality and accuracy of dental procedures. By achieving this AI breakthrough, Imagoworks has significantly increased the competitiveness of the Korean dental industry. The development of Imagoworks' AI-enabled dental 3D CT data automation solution required extensive research and development, including AI learning. This cutting-edge technology, which consumed substantial resources, represents a significant advancement in the field and offers promising potential for streamlining and improving dental diagnostics and treatment planning processes.

Onward as an ICT leader in the global AI digital dental industry

Imagoworks, as a leading provider of AI- and cloud-enabled dental solutions, has played a pivotal role in advancing Korea's AI capabilities. The company has shared its API technology, along with AI modules and other valuable expertise, with numerous companies throughout Korea. This collaborative effort has contributed to the growth of Korea's AI ecosystem. One notable achievement is the successful commercialization of Imagoworks' Dentbird Solutions, the world's first AI- and web-based dental solution. This innovative product has gained traction in the global market, demonstrating the company's ability to deliver cutting-edge solutions. Building on these successes, Imagoworks has secured contracts to supply Dentbird Solutions to Ci Medical, a Japanese dental solutions distributor, and Axsys Dental Solution, a U.S.-based dental solutions company. Imagoworks has set forth a long-term plan for server expansion, aiming to ensure efficient worldwide access to its AI and cloud-based crown prosthesis automated design. Additionally, the company is actively seeking collaborations with dental colleges and institutions to enhance the quality of education and training in the field of digital dentistry. Continuing its commitment to advancement, Imagoworks will persist in AI research and development. The goal is to enhance its solutions to cater to a broader spectrum of patient types, ensuring comprehensive and inclusive applications in the dental industry. Determined to create the AI-enabled medical and dental technologies that will advance the world's digital dental and ICT capabilities and make life better, Imagoworks' tomorrow certainly looks bright.

ICT Funding Project

- **Dedicated Institution** National IT Industry Promotion Agency
- **Business Objective** Artificial Intelligence Industry Infrastructure Formation
- **Business Description** AI voucher program

Company information

- **CEO** Kim Youngjoon
- **Type of Business** Development and distribution of software for medical and dental applications
- **Year of Establishment** 2019. 11.
- **Website** www.dentbird.com

TIME LINE

