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Emotional Recognition Technology Industry Trends oriented towards

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Abstract
The government defines emotional recognition technology as the future of trend as a sympathetic cultural and art content that relieves psychological anxiety and heals sick societies in an uneasy society and the harsh lives of modern people. In addition, based on ICT, the field of diagnosis and prevention of emotional disorders is classified as wellness IT(wellness contents) and focuses on increasing the utility value of the emotional recognition technology market. In particular, the mobile app analyzes the user's various usage patterns to provide a customized service. Users have increased the opportunity to be interested in or participate in social issues through smart phone applications, and they are quick to get news and news. Accordingly, the global technology market around the front and rear of the emotional recognition technology(biometrics(fingerprint recognition/facial recognition/iris recognition, etc.) technology-related hardware/software/platform, etc.) for the pre-line to the source(core) technology development is urgently needed in the joint efforts of the Industry/Academy/Institute..

Keywords: *emotional recognition, sympathetic culture, wellness contents, biometrics*

1. INTRODUCTION

The Happiness Index of Koreans is ranked 56th out of 150 UN member countries, and is rated as one of the OECD countries with a very high mental fatigue[1]. However, there is still a lack of a social and national response system that can be resolved. This is because the negative prejudices of society, which treat mental fatigue as a psychiatric disorder, are adhered to. This requires a change in perception to understand physical and mental illness as the same symptoms. The government defines emotional recognition technology as the future of trend as a sympathetic cultural and art content that relieves psychological anxiety and heals sick societies in an uneasy society and the harsh lives of modern people. In addition, based on ICT, the field of diagnosis and prevention of emotional disorders is classified as wellness IT(wellness contents) and focuses on increasing the utility value of the emotional recognition technology market. To date, the situation is being conducted with a focus on physical health. Gradually, research on emotional recognition techniques that can relieve the accumulated emotional hunger and mental fatigue of social people is spreading. In other words, in-depth research is needed to heal the emotional imbalances of humans, as well as physical health care. Popularization of smart phones is implemented through mobile application, such as LBS(Location Based Services), AR(Augmented Reality) services, and social media based on the wireless internet. This transformed the always connected environment with the freedom to use the services needed anytime, anywhere. In particular, the mobile app analyzes the user's various usage patterns to provide a customized service. Users have increased the opportunity to be interested in or participate in social issues through smart phone application, and they are quick to get news and news[2][3]. This suggests that the effect of smart phone applications on the healthy lives of modern people is very great.

2. Smart Emotional Recognition Technology

2.1 Types of Emotional Recognition Technology

The type of content technology classified as diagnostic, healing and mitigating content based on a smart phone is

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shown in Table 1[4].

Table 1 : Classification of Smart phone-based Emotional Recognition Technology

	Contents
Emotional Diagnostic Contents	- Diagnose one's conditions and problems (stress, depression, etc.)
Healing and Mitigating Contents	- Application reflecting methodology such as counseling healing (Education/Game/meditation/Music/Art healing, etc.)

* Source : Seung-kuk Baek, et al.(November 2017) / re-composition.

Emotional recognition technology has evolved from products for physical health care to high value-added systems and services that meet the mental health aspects, its range of use is gradually expanding. In addition, with the development of smart healthcare technology, the demand for emotional recognition content that can conveniently manage the health of individuals without the constraints of time and space is growing with life expectancy increases. We expect mobile applications based on this to meet this demand needs. As an alternative to functional games or smart healthcare and healthcare systems currently developed for healthcare, emotional recognition content based on smart devices will play a key role as follows[4]:

- Health test to diagnose your physical condition through the mobile applications
- Providing emotional healing services through emotional healing mobile applications

2.2 Classification of Emotional Recognition Contents

(1) Classification by Research Area

Emotional recognition contents seeks harmonious values from various perspectives, and the research area is classified according to the characteristics of the value oriented Table 2[5].

Table 2 : Research Area of Emotional Recognition Technology

	Research Area
Health, Lifestyle	- physical wellness - spiritual wellness - emotional wellness
Life, Environment	- material wellness - occupational wellness - environmental wellness
Activity, Leisure	- cultural wellness - social wellness - intellectual wellness
	
Big Data Analysis of Wellness Contents	

* Source : Knowledge Economy R&D Strategic Planning Group(2017) / re-composition.

(2) Classification by Functional Sector

Wellness content is categorized as self-care, living care, and emotional entertainment, depending on the characteristics of the value that consumers want to gain through the content. A common pursuit is to create a participatory environment where everyone can enjoy it anytime, anywhere. It shows the functional segment classification of wellness content in Table 3[4].

Table 3 : Classification by Wellness Contents Function Area

	Contents
self-care	- Wellness implementation (Life health care, physical fitness enhancement, self-care, etc.) - Directly affecting body, mental and physical appearance - Direct and indirect supportable content
living care	- Supplied with household goods (life of convenience, comfort and peace of mind direction) - Content to create and manage living spaces
emotional entertainment	- Meet the desire to communicate and enjoy participation (Direct or indirect experience such as sightseeing, sports, leisure, etc.) - Content related to activities

* Source : Seung-kuk Baek, et al.(November 2017) / re-composition.

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3. Value of the Emotional Recognition Contents Industry

3.1 Ripple Effect

(1) Social Cost Savings

The global market for smart phone-based emotional recognition content is in its early stages of entry. Gradually, the importance of emotional recognition content as a growth engine that can create high value in the future is a trend that is recognized. Korea has the world's best smart media infrastructure, and has the potential to lead the global emotionally recognized content market if the government's intensive R&D support and support policies are implemented. Thus, the emotional recognition content is recognized as a very high utilization value in the public interest as well as economics. Emotional awareness content that can be used in the field of social and cultural welfare will be able to reduce the social costs caused by the emotional problems that modern people potentially have. In addition, it will be a very effective countermeasure that can effectively prevent depression or stress, such as worsening with pathological symptoms [2][4].

(2) Social Ripple Effect

Smart phone-based emotional recognition content industry can expect a variety of ripple effects in the public and economic dimension[4]:

- Public-interest dimensions: Reduce unnecessary social costs by solving modern emotional problems (fatigue society, emotional hunger, etc.)
- Economic dimension: Providing a tool for planning and producing wellness content solving the emotional problems of modern people

Based on these ripple effects, we are building an ecosystem of emotional recognition content that forms a self-sustaining virtuous cycle. Furthermore, based on this, it is creating an emotional recognition content industry ecosystem as a new high value-added industry, as well as increased sales of job creation and related companies.

3.2 Korea's Emotional Recognition Contents Company Status

Korean emotional recognition contents companies are mainly sensor and handset manufacturers are a lot of herpes. Overseas, there are various companies in the service and DB management sector, but the competitiveness of domestic companies is vulnerable compared to overseas companies. Domestic emotional recognition content companies are concentrated in the field of sensors, terminals, etc. mainly small and medium-sized companies that provided solutions for the government's u-health pilot project and digital hospitals. Since the mid-1990s, Korean companies have participated in the government's u-health pilot project and have been verifying their technology and services. However, operating as a revenue structure that relies on government budgets shows limitations in the development of business models for commercialization. In recent years, large corporations(SK Telecom/KT/Samsung Electronics, etc.) and large hospitals have established joint ventures to seek to diversify their profit structure through the domestic wellness market line[4][6]. The state of Korea's emotional recognition companies are following[4]:

- Sensor, terminal : Jurassic/Sponix/Doosung Technology/Biospace/Resource Medi-Cal/Human Ity Information
- Services : Ocean Itien/HealthMax
- DM management : BioAge

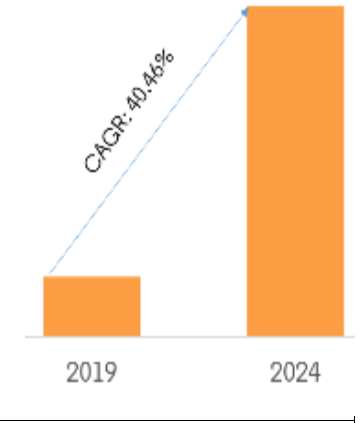
4. Marketability Analysis

4.1 Technology Market Trend Analysis

(1) Emotion Recognition Market Trend

The EDR(Emotion Detection and Recognition) Technology market was valued at $12.37 Billion in 2018 and is expected to reach a value of $91.67 Billion by 2024, at a CAGR of 40.46% over the forecast period, 2019~2024[7]. (See Table 4)

Table 4 : EDR Market - Growth, Trends, and Forecast_2019~2024



EDR Market Growth Trends

- Study Period: 2019~2024
- Base Year: 2018
- Fastest Growing Market: Asia Pacific
- Largest Market: North America
- CAGR: 40.46%

* Source : Mordor Intelligence(2019) / re-composition.

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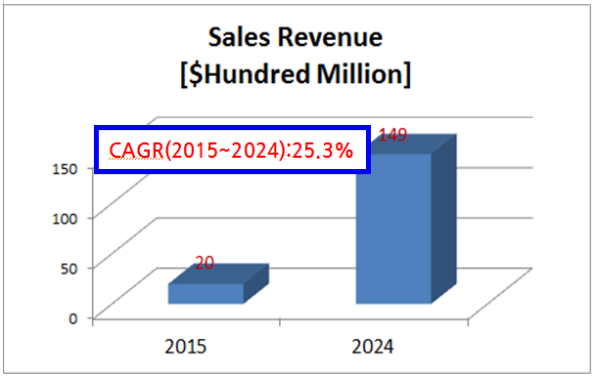
(2) Bio-Recognition Global Market Trend and Entry Issues

The global biometric market is expected $2 Billion in 2015, with a continued growth of 25.3%, $14.9 Billion in 2024[8]. (See Table 5)

Table 5 : Global Biometric Market Sales Growth Trend

	2015	2024	CAGR[%]
Sales Revenue [$Hundred Million]	20	149	25.3



* Source : Tractica(2018) / re-composition.

Over the next decade, the financial, healthcare and public sectors have become a major industry in the biometric synopsis market. In particular, iris, speech recognition technology is expected to increase the largest sales of biometric methods. In addition, it is a trend that applies this in all industries that require security as the most actively used for access control. In order to enable the biometric technology market through technological developments, biometric technology-equipped devices, IoT-based service proliferation, miniaturization and accuracy improvement of sensors, ii.) expanding the prevalence of smart phones and wearable devices, FINTECH and smart healthcare penetration expansion strategy such as[2].

4.2 Future Prospects

Smart phone technology has evolved in the direction of providing a customer-centered personalized service to identify the user's emotions and preferences beyond various multimedia service functions. In particular, fingerprint recognition technology is expected to spread to a variety of biometric technologies, such as face/iris/vein/voice in the future, starting to be applied to the smart phone. Since July 2014, smart phone companies such as Samsung Electronics and Apple have been focusing on securing biometric source technology. Apple acquired fingerprint solution company in 2012 and is pursuing additional biometric companies and M&A. GOOGLE is pushing for biometric technology to be built into android OS. Samsung Electronics filed a patent related to iris recognition in 2012 and has been evaluated as having four times the security of the existing facial recognition, six times higher fingerprint recognition[11]. Thus, as the emotional recognition technology is applied to the field of smart phones and wearable/IoT devices has attracted attention as the next generation growth engine to follow the smart phone. The combination of smart phones and emotional recognition technology has evolved into a variety of services, such as access control, user authentication, etc. that can replace mobile passwords. In an era that stimulates human emotions and encourages consumption, ICT advanced companies are focusing on the development of emotional recognition technology as a breakthrough in the ICT industry during maturity. It is being reorganized into a consumer-oriented industry that maximizes user convenience and satisfaction in a performance and price-oriented market-oriented strategy. The global industry is focused on securing patents and source technologies and creating an emotional(biometric) recognition-based infrastructure. Thus, ICT and aesthetic lifestyle design as an emotional UX(User eXperience) technology that interacts with the user and the device, a new communication method and emotional delivery mechanism is being formed[2].

5. CONCLUSION

Emotional recognition and user UX technology user-device-3DTV, real-world games, augmented reality, situation albeit media, ui and two-way haptic interface of the touch screen method that requires an innovative interface between the content has developed. In the future, it is expected to develop around the user's biometric information and sensory(visual/auditory/tactile/olfactory, etc.) mechanism to very sensitive user biometric information and five senses, such as brain waves and gaze, five senses fusion-based sensitivity UX technology[12]. In particular, while entering the aging society physical health care (disease management/beauty/diet/therapy/yoga, etc.), there is a growing interest in emotional recognition content that can relieve the accumulated emotional hunger and mental fatigue in modern people. Therefore, the shared growth of related front and rear industries(wearable and IoT devices, smart watches, etc.) for entering the global market is required. Accordingly, the global technology market around the front and rear of the emotional recognition technology(biometrics(fingerprint recognition/facial recognition/iris recognition, etc.) technology-related hardware/software/platform, etc.) for the pre-line to the source(core) technology development is urgently needed

in the joint efforts of the Industry/Academy/Institute[2].

REFERENCES

1. Hong-jin Kim, **The Current State and Outlook of theSmart Healthcare Industry**, T Academy, 2018.
2. Young-Hak Kim, Se-Hwan Park, **Global Market rendsof Emotional Recognition Technology and FutureProspects**, IJCC 2018, AACL11 Proceedings, Jan. 31~Feb.7. 2018.
3. Survey of Smart phone use in the first half of 2016 (Korea Internet & Security Agency, 2018).
4. Seung-kuk Baek, et al., **Research on Wellness Contents Strategy based on Smart media**, Research Report on The Strategy for The Future of Broadcasting & Communication Convergence, Ministry of Science and ICT, November 2017.
5. **Analysis and Development of Future Wellness Industry Trends**(Knowledge Economy R&D Strategic Planning Group, 2017).
6. **Research on Industrial Development Plans through Analysis of Business models in the Wellness Industry** (National IT Industry Promotion Agency, 2018).
7. **Emotion Detection and Recognition Market-Growth, Trends, and Forecast(2019~2024)**, Mordor Intelligence,2019.
8. <https://www.mordorintelligence.com/industry-reports/emotion-detection-and-recognition-edr-market>
9. **Global Bio-Recognition Technology Market Trends**, Tractica, 2018.
10. In-Ho Jo, Do-hyang Kim, **Growth and Opportunities in the Smart Healthcare Market**, ISSUE CRUNCH, KT Economic Management Institute, 2017.
11. United Nations Report Data synthesis(2018).
12. **Attention is also Focused on Next-generation Products such as Biometric Technology, the IoT-beyond Smart phones**(ET News, July 7. 7. 2016).
13. www.embeddedworld.co.kr/atl/view.asp?a_id=5457
14. Jabarullah, N. H., Jermsittiparsert, K., Melnikov, P. A., Maseleno, A., Hosseinian, A., & Vessally, E. (2019). Methods for the direct synthesis of thioesters from aldehydes: a focus review. Journal of Sulfur Chemistry, https://doi.org/10.1080/17415993.2019.1658764.
15. Basri, W. (2019). Management concerns for social media usage: moderating role of trust in Saudi communication sector. Polish Journal of Management Studies, 19 (1), 59-69.