

A Study on the Direction of Department of Contents, University Curriculum Introduction According to the Development Status of Image-generating AI

Sung Won Park* · Jae Yun Park**

Abstract

In this study, we investigate the changes and realities of the content production process focusing on image generation AI revolutions such as Stable Diffusion, Midjourney, and DALL-E, and examine the current status of related department operations at universities and find out the status of the current curriculum. Through this, we suggest the need to produce AI-adaptive content talent through re-establishing the capabilities of content-related departments in art universities and quickly introducing curriculum. This is because it can be input into the efficient AI content development system currently being applied in industrial fields, and it is necessary to cultivate talent who can perform managerial and technical roles using various AI systems in the future. In conclusion, we will prepare cornerstone research to establish the university's status as a source of talent that can lead the content industry beyond the AI content production era, and focus on convergence capabilities and experience with the goal of producing convergence talent to cultivate AI adaptive content talent, suggests the direction of curriculum application for value creation.

Keywords : Image generation AI, Content Industry, Art University, Curriculum

Received : 2023. 08. 02. Revised : 2023. 10. 02. Final Acceptance : 2023. 10. 19.

* First Author, Professor of Department of Animation, Hoseo University, e-mail : seesaw@hoseo.edu

** Corresponding author, Student majoring in animation at Hoseo University, 105, Bansong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam 51424, Tel : ***-****-**** e-mail : wodbsd116@naver.com

1. Introduction

Although it is gradually emerging from the sluggish atmosphere caused by the recent COVID-19 pandemic, the economy is still experiencing a slowdown in vitality in 2023 due to global low growth and low youth employment rates. In this situation, new drivers of leap forward and regeneration are needed, and new industries and creative and innovative companies are required as well as maintaining the competitiveness of existing major industries and leading companies. In this context, we should pay attention to the content industry. Recently, in modern society, the form of media consumption has changed very rapidly, and after the COVID-19 pandemic, SNS media usage has soared and information storms have accelerated, and videos that must be interested in a short period of time are preferred. Producers should be able to supply various media contents such as videos, webtoons, and graphics more quickly in line with this trend. However, content production is relatively time-consuming and expensive because it goes through the process of drawing and assembling images on a frame-by-frame basis, making it difficult for content consumers to quickly supply content. Due to these times and realistic constraints, content creators need to consider new strategies. With the recent rapid evolution of image generation AI technology, the content industry has announced R&D results and commercial content production processes, showing that it can be fully utilized in the production pipeline and that the capabilities required by existing personnel are changing. Experts say it won't be long before the era of full-fledged changes in content production pipelines using AI technology comes¹⁾. Through the content in-

dustry, we can bring about a new leap forward in the economy from a national crisis. In particular, the spread of global OTT services and the enormosity of the YouTube content market have brought an important turning point in the content industry, and it is becoming a major industry in Korea. The content industry is being reborn as a content industry through a huge platform by converging with domestic and foreign innovative technologies such as AI, big data, 5G/6G communication, and metaverse, which converts our lives to digital and accounts for a large portion of industrial demand.

Accordingly, university education needs to play a role in providing a supply for this demand. AI convergence content education is already seen as not a technology for the future, but for the present. Therefore, in order to respond appropriately to the future, it is necessary to establish not only content creation and production capabilities, but also core capabilities to play technical and management roles and industry-academic curriculum to respond to efficient content development in the new technology industry. To this end, it is necessary to introduce a Department of Contents, University Curriculum that can lead the direction and speed of change in the AI content industry, and it is important to cultivate the ability to take the lead in responding to industrial changes and acting as a supplier to demand. Through this study, it is expected that it will lead to changes in the industry and lead to the growth of the innovative content industry.

This study focuses on the popularization of

1) Jang Jin-gu[2023], The future of the creative environment brought by AI, I love character,2023. Available at <https://ilovecharacter.com/news/newsview.php?ncode=1065541532702868&dt=m>.

image-generating AI such as stable diffusion, Midjourney, and Fire Fly, the need to apply AI future and curriculum, establishing content-related departments at universities that respond to the AI transformation era, and spreading AI content production processes. Until now, most AI-related departments and curriculums have been opened in engineering, but the AI revolution, called by image-generating AI such as Stable Diffusion and Midjourney, has expanded to humanities and arts, and most AI-related departments are selecting new students regardless of the field. The case of applying this in a content-related department and establishing it as a curriculum for production and planning is the AI design department of Kookmin University²⁾. However, considering the current social utilization and speed of development of AI image-related tools, even if AI is not reflected in the name of the department, it is urgent to introduce it into the curriculum through re-establishment of talent. Therefore, this study proposes the direction of the application of the curriculum to create convergence capabilities, experience-oriented, and value with the aim of producing AI-adaptive content talent that can be quickly put into the AI content production process applied in industrial sites. In fact, various content fields have recently used AI to produce various animations, movies, and advertisements, which are helping companies improve their imagination and save time and money.³⁾

2) Rena2076[2023], Humanities in AI-related departments at 9 universities in Seoul are also available!, naverblog, 2023. Available at <https://blog.naver.com/rena2076/223015127804>.

3) Cho[2023], It also makes movies and advertisements with AI, ITchosun, 2023. Available at https://it.chosun.com/site/data/html_dir/2023/08/07/2023080700341.html.

2. Contents and Methods of Research

2.1 The Contents of a Study

The current status and necessity of the image generation AI curriculum of domestic university content-related departments are as follows.

[research question 1]

What are the commercialized image generation AI platforms and principles?

[research question 2]

What are the image and video works produced with AI technology, and at what stage can they be applied to content production?

[research question 3]

What is the current status of AI content-related department openings and educational applications in Korea, and what is the application direction for each educational course according to the current level of development?

[research question 4]

What are the necessary competencies for training AI adaptive content production personnel?

2.2 Method of research

As a method of research, first, we summarize the current status and utilization of systems that can generate image and video content with current AI technology.

Second, we will examine the applicability of university education by analyzing cases of video content and animation works produced with AI technology and examining the extent to which the technology can be implemented

at the current level of development.

Third, we look into the current status of AI convergence education in content-related departments at domestic university institutions.

For the current status of university institutions, we investigate the operation status of AI content-related departments / majors, and then design the ideal talent and curriculum for nurturing AI adaptive content talent. Through this, the direction of application of the relevant curriculum is derived.

3. Main Subject

3.1 Image Generation AI Platform and Principles

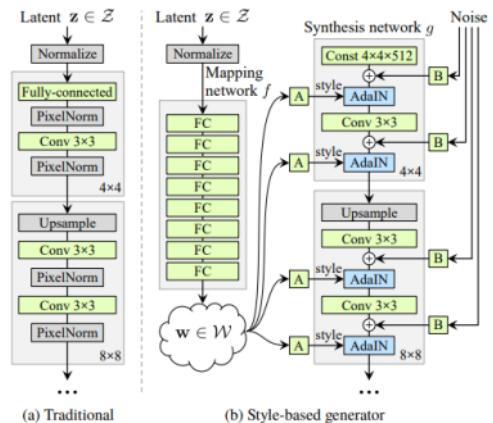
Image creation through AI is one of the fields that has made great progress in recent years. Deep learning technology is used to train artificial intelligence models to create new images. To achieve this, a model must be trained using a large amount of image data, and data collection is very important.

3.1.1 Creation principles and characteristics of AI image creation platform

Image creation platforms through AI are being developed and evolved in various ways, and representative tools include DALL-E and DALL-E mini made by Open AI, imagen and parti made by Google, GauGAN2 made by NVIDIA, and Midjourney made by Midjourney. There is. Above all, as Stability AI's Stable Diffusion, which is suitable for creating cartoon or animation characters, was distributed under an open source license on August 22, 2022, the number of Image Generation AI users has increased exponentially, and various experiments and

Contents began to boom. First, you can understand the creation principle by looking at the characteristics of NVIDIA's StyleGAN, which was launched in the early days (2018) and continues to experiment and evolve as an image generation AI tool. StyleGAN is a deep learning model that generates high-quality images using generative adversarial network (GAN), an artificial intelligence technology.

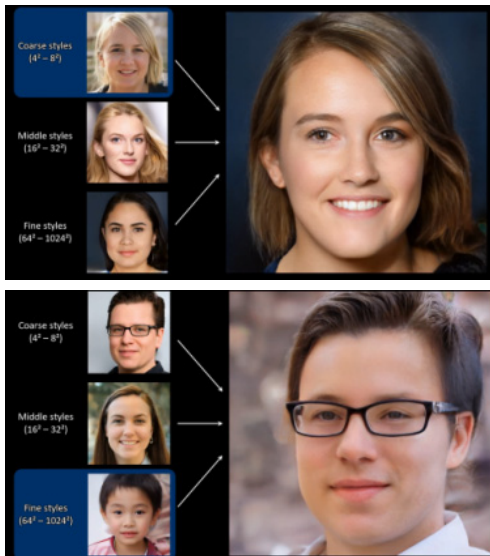
StyleGAN, unlike existing GAN models, has the characteristic that the generated images are high resolution and high quality. Additionally, the generated images have a variety of styles and characteristics, and also show high creativity.



<Figure 1> Tero Karras et al. [2018: 2], Naver Wikipedia

There are two major versions of StyleGAN. The first version is StyleGAN, which generates the entire image, and the second version is StyleGAN2-ADA, which manipulates part of the image. Additionally, instead of using random noise during the image generation process, StyleGAN generates images using random style vectors, allowing various features of the image to be manipulated, and plays a major role in making the generated images more diverse and creative. Do it. By

style mixing (by giving different style vectors for each resolution) the different w vectors used to create the three photos on the left, the photo on the right containing the styles of all three images is created [Karras and Aila, 2019]. Below is an example photo using StyleGAN.



〈Figure 2〉 Example Photo Created Through StyleGAN

The second representative AI image creation platform is DALL-E. It is an AI image creation platform developed by OpenAI, and creates new images based on sentences entered in natural language. DALL-E has the feature of being able to generate high-resolution images from 256*256 pixels to 1024*1024 pixels, and has the ability to create better images through continuous learning. The model is continuously updated and learning is in progress using more data. Additionally, it can create various images depending on the sentence you enter. Below is an image created by entering the sentence “squirrel holding a cell phone” using DALL-E.

First, it is a deep learning algorithm. Most

AI image creation platforms use deep learning algorithms to create images, which allows for the creation of more sophisticated and diverse images.



〈Figure 3〉 Example photo created through DALL-E

These AI image creation platforms have something in common.

Second, high-resolution image creation. Many AI image creation platforms generate high-resolution images, allowing users to create more detailed and sophisticated images.

Third, scalability. The AI image creation platform is scalable so that it can be used in a variety of fields, allowing users to create and utilize images for various purposes.

Lastly, improvements and updates. Most AI image creation platforms continuously improve and update models, helping users achieve higher levels of image creation capabilities. Below is a table summarizing the commonalities of AI image creation platforms.

We will analyze the principles and characteristics of Stable Diffusion and Midjourney, which are rapidly rising after 2022 and hastening the possibility of AI use in the content industry.

First, Stable Diffusion is a text-to-image artificial intelligence model distributed by Stability AI under an open source license, <https://namu.wiki/w/Stable%20Diffusion> released on August 22, 2022.

software developed by Midjourney. If you enter text in English in the prompt application window or create and insert an image as a link, the desired image will be created and is similar to DALL-E analyzed previously.

<Table 1> Common Principles of AI Image Creation Platforms

Common principles of AI image creation platforms	
Deep learning algorithm	Most AI image creation platforms use deep learning algorithms to create images, which allows for the creation of more sophisticated and diverse images.
Create high-resolution images	Many AI image creation platforms generate high-resolution images, allowing users to create more detailed and sophisticated images.
scalability	The AI image creation platform is scalable so that it can be used in a variety of fields, allowing users to create and utilize images for various purposes.
Continuous improvements and updates	Most AI image creation platforms continuously improve and update models, helping users achieve higher levels of image creation capabilities.



<Figure 4> Example Picture Created Through DALL-E4

It is a deep learning artificial intelligence model.

Midjourney takes place on a Discord server, and if you use the free plan, anyone can view your creations. If you don't want this, you need a paid subscription.

Unlike the existing text-to-image models analyzed previously, such as NVIDIA's StyleGAN or OpenAI's Dall-e 2, it was released with significantly reduced computer resources so that it can be run with less than 4GB of VRAM, and was recently released as a smartphone app that can be run on the iPhone. It was released. Unlike other AI platforms, stable diffusion can relatively maintain the initially designed form when the character moves and moves, and allows the user to implement images by adjusting detailed items numerically, making it more suitable for use in animation.

Many created works are being produced and presented to the public in conjunction with ChatGPT, and the painting 'Space Opera Theater' produced with Midjourney in 2022 became famous by winning first place in the digital art category at the Colorado State Fair Art Competition.



<Figure 5> Midjourney Creation Work 'Space Opera Theater'

Next, Midjourney is artificial intelligence

4) AI Cartoonish Style Content Production Process Study, Lee Ho-young, Park Sung-won, 2023 Korean Society for Information Technology Applications Spring Conference Paper Collection.

The number of users is rapidly increasing to the extent that various video works and memes are being produced and released by creating desired images through input prompts in English and linking them with other AI programs such as D-ID. It is also widely used in commercial content.



<Figure 6> Hoseo University Animation Department AI Creation Lab AI Avatar Meme' video produced with Midjourney [Park and Lee, 2023]

The characteristics of the two programs above are summarized in a table as follows.

<Table 2> Characteristics of Midjourney and Stable Diffusion

	Midjourney	Stable Diffusion
Common principles	- A variety of algorithms allow you to create any image style you want - Can create high-quality images with the upscale function	
Distinction	- Monthly, annual license subscription required - Difficult to convert while the pose is fixed	- Open source with no license subscription fees - Possible to implement various angles and movements while maintaining the shape
characteristic	- After creating an image, it can be derived by strengthening the characteristics of a specific image. - Specialized in abstract or realistic images	- No interface like other graphics programs - No image modification function

3.1.2 Utilization of the Image Generation AI Platform

Image creation technology through AI is used in various fields.

Firstly, it is the field of works of art. AI programs such as StyleGAN analyze artists' works and create new works based on this. Additionally, in the design field, it can be used to create new design ideas. In fact, recently, AI-generated works have been exhibited at exhibitions, and some works have even been sold at auction at very high prices.⁵⁾

Second is the gaming and virtual field. In the field of using AI to generate graphics for games and virtual worlds, AI is used to create more realistic graphics.⁶⁾

Thirdly, it is the film and advertising industry. In the film and TV industry, AI is used to create new environments and special effects. For example, Weta Digital uses AI to generate various creatures and creatures in its movies⁷⁾. Until now, most individuals have used AI or startups have created it to promote their own AI solutions, but it is true that commercial forms have been on the rise recently. Recently, advertisement videos for Samsung Life Insurance and McDonald's were also produced, and the background music inserted in the advertisement was also created using AI, with subtitles explaining that it was produced using AI.

Fourth, the medical field. In the medical

5) Kim Sung Hwi[2023], "Wasn't it drawn by a person?"... The art world's "noisy" in AI's "girl with pearl earrings", accessed 11 March 2023, Available at <https://news.mt.co.kr/mtview.php?no=2023031208010635289>
 6) Im Dae Jun[2023], "Generated AI that also draws game graphics instead.", Altimes, 2023. Available at <https://www.aitimes.com/news/articleView.html?idxno=149782>,
 7) Im Dae Jun[2023], "AI and Metaverse Technologies Shined in 'Avatar 2.'", Altimes, 2023. Available at <https://www.aitimes.com/news/articleView.html?idxno=148768>,

field, AI is used to generate new images or analyze images to diagnose diseases.⁸⁾

Below is a table summarizing the use of the AI image creation platform.

〈Table 3〉 Utilization of AI Image Creation Platform

Utilization of AI image creation platform	
field of works of art	- Analyze artists' works and create new works based on them - Used to create new design ideas
Gaming and virtual sector	- Creates more realistic graphics
Film and advertising industry	- Create new environments and special effects
medical field	- Used to diagnose diseases by generating new images or analyzing images

3.2 Production and Application of AI Content at this Stage

AI image generation technology provides various ways to assist creators and increase efficiency in the animation production process. In fact, the number of cases of animation production using AI image generation technology is increasing, presenting new possibilities in line with changes in the industrial environment. Image generation AI can create a variety of images depending on the diversity and quality of data, obtain unexpected results based on learned data, and provide new ideas to creators. In addition, recent image generation AI has improved its ability to generate images with high resolution and fine details due to the development of deep learning mod-

els and increased computing power, enabling the creation of high-quality images and personalized images according to user needs. Because it can be created, it is possible to provide targeted content in the marketing or advertising industry. Below, we will discuss examples of AI video and animation production.

The first example is *The Dog and the Boy*, planned by Netflix, an OTT service. It is known that all backgrounds of this animation were created with AI, and only post-processing was done by humans. Netflix JAPAN said, "It is an experimental measure that will help the animation industry that is short of manpower," and "All cuts and backgrounds in the 3-minute video are image-generated AI." "We used technology," he explained.⁹⁾



人手不足のアニメ業界を補助する実験的な取り組みとして、3分間の映像全カットの背景画に画像生成技術を活用！

〈Figure 7〉 *The Dog and the Boy*

The second example is SNOW. Snow is a Korean mobile application that provides vari-

8) Kim Mi Jeong[2022], "AI and metaverse technologies shining in 'Avatar 2' "I know everything just by looking at the eyes" Google researchers develop deep learning to diagnose diabetes with eye images.AItimes, 2022. Available at "https://www.aetimes.com/news/articleView.html?idxno=143652.

9) Im Ju Hyeong[2023], "AI Draws Cartoon Background... Surprised" by the Netflix experiment", Asian Economy, 2023. Available at https://www.asiae.co.kr/article/2023020322290635454.

ous contents such as camera filters, stickers, and emoticons. It uses facial recognition technology and artificial intelligence technology to recognize the user's face and apply various filters and emoticons to create more fun and creative content.¹⁰⁾ Additionally, a sharing function is provided within the Snow app so that users can share on various social media platforms. Recently, 'Snow Park', an AR theme park based on snow, was opened, and various snow-related products and services were also released. Below is a picture showing the AI avatar creation process provided by Snow.



<Figure 8> AI avatar creation process using Snow

10) Jeon Mi Jun[2023], "AI avatar who looks like me, I meet you on Snow!... AI Avatar Service attracts 200,000 paid users for 15 days", Artificial Intelligence Times, 2023. Available at <https://www.aitimes.kr/news/articleView.html?idxno=27188>,

3.3 Current Status of AI Convergence Curriculum in Korea

3.3.1 AI content-related department/major operation status

As the domestic AI craze grows stronger, universities everywhere seem to be focusing on nurturing AI talent.¹¹⁾ Below is a table analyzing the operation status of content-related departments at domestic art universities that promote AI education and have AI in the department name or educational goals that include content to cultivate AI convergence talent.

① Kookmin University

학과명	AI디자인학과 https://aidesign.kookmin.ac.kr/aidesign/index.do		
소속단과대학	조형대학	신설년도	2022년
교육목표	인공지능 적용형 디자이너: AI에 대한 이해기반 미래 디자인 방법 탐구		
교육과정	<p>기초 과정 (1~2학년 대상)</p> <ul style="list-style-type: none"> 1학년 교과목 : 기초디자인, 디지털 드로잉, 제품과 시스템, 디자인 사고, 디자인역사와 윤리, 다빈치 작업실, 빅데이터와 인공지능, 디자인을 위한 파이썬, S-TEAM Class 2학년 교과목 : 디자인과 컨텍스트, 정보디자인, IoT 디자인, AI와 스마트 스페이스, 인터랙션 디자인, 디자인 데이터분석, 비즈니스 디자인, AI와 아트, 상상 작업실 <p>심화 과정 (3~4학년 대상)</p> <ul style="list-style-type: none"> 3학년 교과목 : 데이터 시각화, 디자인을 위한 유니티, 디지털 스토리텔링, 모바일 프로토타이핑, AI와 서비스 디자인, 자연어 처리 실습, 생성디자인, 음악과 사운드 UX, 브레인 인터페이스 4학년 교과목 : AI디자인 포트폴리오, 로보틱스 이론과 실제, 디자인 창업, 디지털트윈과 메타버스, 생체인식 이론과 실제, 디자인 지적재산권, 앱스톤 디자인 		
입시전형	<p>수시모집 (10명)</p> <p>학생부 종합 (국민프린티어 전형), 수능 최저 학력: 없음</p> <p>• 1단계: 서류평가(3배수 선발) • 2단계: 면접 평가(1배수 선발)</p> <p>정시모집 (15명)</p> <p>• 1단계: 학생부 교과 30%, 수능 70%</p> <p>• 2단계: 1단계 성적 50%, 실기(기초조형평가) 30%, 면접(사고력평가) 20%</p>		
취업분야	정부부처 및 공사대학 및 연구소, IT관련 기업, 미래환경 관련 기업, AI 활용 데이터 분석 및 기술개발 관련 기업, 컨설팅 관련 기업, 마케팅 관련 기업, 미래 신기술 개발 관련 기업		
창추전망	새로운 융복합 시대에 미래 디자이너 능력으로 요구되는 전문 지식과 실무경험으로 미래기술 및환경을 통찰, 인공지능 적용형 디자이너 양성		
교육과정특징	<p>기초 과정 (1~2학년 대상): 인공지능, 빅데이터 개념 파악, 기술과 디자인의 결합과 미래환경에서의 적용을 학습</p> <p>심화 과정 (3~4학년 대상): 4차 산업혁명 관련 학습, 인공지능, 빅데이터 방법론 학습, 사용자 중심의 디자인 연구 및 실무 능력 함양</p>		

<Figure 9> Kookmin University AI Design Department

11) Lee Ha Na[2023], "The establishment of an artificial intelligence department in the university district is in...Where are the 42 new units this year?..", Alltimes, 2023. Available at <https://www.aitimes.com/news/articleView.html?idxno=137332>

The above departments place importance on professional knowledge and experience that combines understanding and insight into future technology and the environment, cutting-edge technologies such as artificial intelligence and big data, and design for the future information industry. Therefore, we are developing an artificial intelligence adaptive curriculum such as big data, artificial intelligence, and data visualization, and it is comprised of subjects that enable user-centered design research and practical skills. Lastly, the goal is to foster artificial intelligence adaptive designers by gaining insight into future technologies and environments with the professional knowledge and practical experience required as future designer capabilities in the new convergence era.

② Seoil University

학과명	시융합콘텐츠학과 https://hm.seoil.ac.kr/aigame/	
속속단과대학	IT융합학부	신설년도
		2022년
교육목표	비즈니스 마인드를 갖춘 빅데이터 전문가, 데이터를 다루는 인공지능 전문가, 인공지능을 이해하는 게임 전문가 양성 창의 융합형 교육/ 현장 중심형 교육/ 자기주도형 교육/ 인성지성형 교육 • 인공지능소프트웨어전공 인공지능개론, 인공지능 이해와 활용, 딥러닝 실습, AI 데이터 활용 실습, 인공지능 프로그래밍 등 • 데이터사이언스전공 데이터이해와 활용, 데이터 활용기초, 비즈니스 전략 수립, 데이터 분석 기획, 데이터 마이닝 실습 등 • 게임전공 게임기획, 게임 스토리보드, 게임프로그래밍, 게임 엔진, 게임 서버 프로그래밍, AR/VR 게임 제작, 게임 산업 세미나 등	
교육과정	<ul style="list-style-type: none"> 1학년: 필수- 파이썬프로그래밍, 컴퓨터그래픽기초, 컴퓨터프로그래밍1,2, 웹프로그래밍기초, 일러스트레이션, 웹디자인 선택- IT개론, 대학수학, Lab1-2(기초설계) 2학년: 필수- JAVA, UNIX, DB이론및실습, JSP/Servlet, 멀티미디어이론및실습, 영상편집실무1-2, 3D그래픽, 3D그래픽응용, 디지털애니메이션 선택- 촬영실무, 2D융합디자인, Lab3-4(기초설계), JAVA실무, 서버구축실무, 콘텐츠기획론 3학년: 필수- 모바일프로그래밍, 멀티미디어신호처리, 매트페인팅, UI/UX디자인, 컴퓨터비전및응용, VFX 선택- 시스코네트워크, 고급웹프로그래밍, 게임프로그래밍기초, 그래픽프로그래밍, 데이터분석론, 3D영상제작, Lab5-6(종합설계startup), 전산통계학, 임베디드시스템, 고급시프로그래밍, 모바일프로그래밍응용, JAVA프레임워크 4학년: 필수- 프로젝트실무1,2(종합설계) 선택- 중앙및가상현실, 디지털표현식, 정보통신론, 데이터마이닝, 현장실습1, Lab7-8(종합설계startup), IT실무특강, 현장실습2 	
입시전형	수시 1차모집, 2차모집 • 정원 내 특별 전형(24명, 12명): 학생부 성적 100% • 정원 외 특별전형(8명, 6명): 학생부 성적 100% 및 분야별 증명 서류 정시모집 • 일반전형 수능위주 (3명): 학생부 성적 40%, 수능 성적 60% • 일반전형 학생부위주 (1명): 학생부 성적 100% • 정원 외 특별전형(3명): 대학성적 100% 및 분야별 증명 서류	
취업분야	인공지능 SW분야, 빅데이터 분야, 데이터 모델링, 데이터 가공 및 분석 분야, 게임개발 분야, 게임 기획 분야, 게임 운영 및 QA 분야	
향후전망	미래사회를 위한 기술이 아닌 현재를 위한 혁신적인 산업으로 자리잡은 인공지능, 빅데이터, 게임분야의 비즈니스 마인드를 갖춘 전문가 양성	
교육과정특징	<ul style="list-style-type: none"> • 융합 역량 교육: 콘텐츠 이해, 다양한 산업의 요구 및 특성 분석 • 경험 중심 교육: 경험을 통한 지식 습득 및 자신감 향상 • 가치 창출 교육: 산업 및 사회 문제 해결, 자신과 지식 가치 증진 	

<Figure 10> Seoil University AI Convergence Contents Department

The above departments deal with curricula to train experts with a business mind in the

fields of big data, artificial intelligence, and games. This curriculum consists of creative convergence, field-oriented, self-directed, and character-intellectual education, and places importance on education that solves industrial and social problems and creates value. In particular, we aim to cultivate experts with a business mind in the fields of artificial intelligence, big data, and games, which are established as innovative industries for the present rather than technologies for the future society.

③ Nazarene University

학과명	스마트미디어트랙 https://cms.komu.ac.kr/sites/it/index.do	
속속단과대학	IT인공지능학부	신설년도
		2016년
교육목표	정보와 사회의 요구에 발맞추어 영상미디어를 기반으로 하는 영상제작, 편집, 음향편집, 특수효과, 웹 그래픽 디자인, 애니메이션, 모바일 프로그래밍 등 멀티미디어콘텐츠 관련 전문지식을 습득하고 실무 중심의 교육으로 멀티미디어콘텐츠 관련 기획 및 제작능력을 배양하여 급변하는 정보와 사회를 선도할 멀티미디어콘텐츠 분야 전문인을 배양	
교육과정	<ul style="list-style-type: none"> 1학년: 필수- 파이썬프로그래밍, 컴퓨터그래픽기초, 컴퓨터프로그래밍1,2, 웹프로그래밍기초, 일러스트레이션, 웹디자인 선택- IT개론, 대학수학, Lab1-2(기초설계) 2학년: 필수- JAVA, UNIX, DB이론및실습, JSP/Servlet, 멀티미디어이론및실습, 영상편집실무1-2, 3D그래픽, 3D그래픽응용, 디지털애니메이션 선택- 촬영실무, 2D융합디자인, Lab3-4(기초설계), JAVA실무, 서버구축실무, 콘텐츠기획론 3학년: 필수- 모바일프로그래밍, 멀티미디어신호처리, 매트페인팅, UI/UX디자인, 컴퓨터비전및응용, VFX 선택- 시스코네트워크, 고급웹프로그래밍, 게임프로그래밍기초, 그래픽프로그래밍, 데이터분석론, 3D영상제작, Lab5-6(종합설계startup), 전산통계학, 임베디드시스템, 고급시프로그래밍, 모바일프로그래밍응용, JAVA프레임워크 4학년: 필수- 프로젝트실무1,2(종합설계) 선택- 중앙및가상현실, 디지털표현식, 정보통신론, 데이터마이닝, 현장실습1, Lab7-8(종합설계startup), IT실무특강, 현장실습2 	
입시전형	정원 내- 학생부교과: 교과 100%, 학생부종합: 서류60%, 면접10% 정원 외- 학생부교과: 교과 100%,자각인증서류 학생부종합: 서류60%, 면접10%, 자각인증서류 • 정시 모집 일반학생: 수능 100%, 특성화고농어촌: 교과100%, 자각인증서류	
취업분야	웹 제작 및 개발 관련응용, 케이블TV, 위성 TV, 특수영상편집, 방송사, 영화 제작사, 광고 회사 등의 영상 및 그래픽 분야, 미디어 제작 및 전문가, 애니메이션 제작 관련 업체, 관공서, 기업 전산실, 금융기관 등	
향후전망	"방송과 융합된 멀티플랫폼" 멀티미디어콘텐츠 전문가 양성을 통한 "정규직 100% 취업"	
교육과정특징	미래 정보산업을 주도할 인재가 갖추어야 할 멀티미디어 기본지식과 멀티미디어콘텐츠 기획 및 제작능력에 중점을 두고 이론과 실무를 통하여 학습하며, 전공 특성화 전략(인턴제, 창업동아리, 집중교육, 해외취업프로그램, 특수전공 등) 보유	

<Figure 11> Nazarene University Smart Media Track

In the above departments, you can acquire professional knowledge in the field of multimedia content production, such as video production, editing, sound editing, graphic design, animation, and mobile programming,

and based on this, you can develop your planning and production skills in multimedia content. It deals with the curriculum. Through this, we aim to cultivate experts in the field of multimedia content who can lead in a rapidly changing information society. We focus on learning basic multimedia knowledge and multimedia content planning and production skills, and provide major specialization (internship, start-up club, intensive education, Overseas employment program, double major, etc.)

④ Sehan University

학과명	사운드디자인학과 https://design.sehan.ac.kr/
소속신과대학	예술학부 신설년도 2023년 디자인학과에서 명칭변경
교육목표	디자인의 본질인 예술, 기술, 문화콘텐츠융합 역량을 갖춘 디자이너 양성
교육과정	<p>전공기초</p> <ul style="list-style-type: none"> 1학년 교과목: 디자인론, 디자인색채학, 컴퓨터그래픽I, 컴퓨터그래픽II 비주얼커뮤니케이션 디자인 2학년 교과목: 기초시각디자인, 브랜딩디자인, 타이포그래피, 편집디자인, 전공세미나I, 전공세미나II 3학년 교과목: 크리에이티브콘텐츠광고, 크리에이티브워크샵, 전공세미나I, 전공세미나II 디지털미디어디자인 2학년 교과목: Memedia디자인, VR모션그래픽, 기획과 디자인 3학년 교과목: UX/UI디자인, 인포그래픽스디자인, 3DVR 디자인, VR디자인 스튜디오 실무디자인 4학년 교과목: 졸업작품및논문I, 졸업작품및논문II, 산학프로젝트연구I, 산학프로젝트연구II, 포트폴리오제작
입시전형	<ul style="list-style-type: none"> 수시 모집 정원 내 실기/실적전형(일반학생전형) : 실기 100% 정시 모집 실기/실적전형(일반학생전형) : 실기 100%
취업분야	시각·정보 디자인 전공: 기업체 디자인연구소 광고디자인, 일러스트레이터, 패키지디자인, 편집디자인, 캐릭터디자인, 브랜딩, 만화·영화제작자, 애니메이션 등 비주얼커뮤니케이션디자인 전문분야 제품·환경디자인 전공: 가전, 사무 및 산업기기, 환경, 운송기기, 가구, 생활자기 디자인, 문화재 연구원 및 인테리어 관련 제조회사
향후전망	대학의 학제적(interdisciplinary) 디자인 교육과정중 통한 현장 실무형 디자인인력 양성개발프로그램 개발
교육과정특징	현재 요구되는 디자인 능력 이외에도 기술적, 관리적 역할 수행 위한 핵심역량과 현대의 첨단 멀티미디어 환경 및 뉴테크놀러지 공간에서 효율적인 디자인 개발에 대응한 산학·학제적 디자인교육 시스템 구축

(Figure 12) Sehan University AI Content Design Department

The above department is building an industry-academic design curriculum by strengthening the technical and managerial capabilities to efficiently develop design in modern, cutting-edge multimedia environments and new technology spaces. Even if AI education is not advertised in the name of the department, existing con-

tent-related departments are conducting research on curriculum composition for the introduction of image generation AI into the curriculum, developing online lecture content in the form of shared lectures, and providing information on existing subject content. Attempts are being made to apply AI as a tool, assigning tasks and conducting research, and the educational goal is to foster designers with the ability to integrate art, technology, and cultural content, which are the essence of design.



(Figure 13) Example of AI Character Assignment from the Department of Visual Design at Tongmyong University¹²⁾

(Figure 13) shows the process and results of a class on character design using image generation AI at the Department of Visual Design at Tongmyong University.

The following picture is an example of the current stage in which AI tools can be used in the video content production process. The subjects corresponding to the example items

12) https://m.facebook.com/story.php?story_fbid=pfbid0dvEBeeoXcTKY9HZ8KCsCY3btWm86MPzspW2HHzdeQj7xfcJvsAnEgNBPLJ2q3Esl&id=100063541149922&mibextid=Nif5oz.

can be nomadized and designed by applying AI to the performance process of each subject.

과정	활용될 수 있는 예시	내용
프리 프로덕션	개막타 디자인	가중된 제작타 디자인을 학습할 후, 유사한 스타일과 특징을 가진 새로운 제작타 디자인을 생성하여 다양한 제작타를 빠르게 제작할 수 있음
	배경 컨셉아트 생성	학습된 (생미)생성 기반으로 AI는 다양한 스타일과 특징을 가진 배경 이미지를 생성할 수 있으며, 이는 시간과 노력을 절약하여도 일관된 시각적 분위기를 유지할 수 있는 장점이 있음
제작	배경 및 환경 생성	AI는 (생미)생성에서 중요한 다양한 장소의 배경을 AI에 학습시키고, AI는 이를 기반으로 새로운 배경 이미지를 생성할 수 있음
	차량화 및 일관성 유지	AI (생미)생성 기반의 새로운 제작타 디자인과 동일한 (생미)생성 기반으로 새로운 (생미)생성물을 생성할 수 있으며, 이는 제작타 (생미)생성 제작에 소요되는 시간과 노력을 줄이면서도 일관성 있는 (생미)생성을 유지할 수 있음
포스트 프로덕션	에디터 캡스케일링	제작사이드의 (생미)생성 이미지를 AI에 학습시킨 후, AI는 보다 고품질의 이미지를 생성할 수 있으며 이는 (생미)생성의 시각적 품질을 향상시키고 세부 사항을 더욱 선명하게 표현할 수 있음
	메타데이터의 일관성 유지	이미지 (생미)생성을 분석하고, 원하는 시각적 용어나 분류기에 맞게 (생미)생성 결과를 조정할 수 있으며 이는 (생미)생성의 시각적 일관성을 유지하고 원하는 콘텐츠를 위해 도구를 활용할 수 있음

〈Figure 14〉 Example of Possible use of Generated AI According to the Video Content Production Process

Considering the above possibilities, the subjects in content-related departments are subjects in which Image generation AI can be applied as a tool to the processes of existing subjects, and subjects in which research on continuously evolving and rapidly changing AI technology is designed through self-directed projects. There will be a direction to open new courses that incorporate project-based teaching methods. First, if we try to nomadize subjects that can introduce AI technology as a tool into existing subjects, it is as follows.

〈Table 4〉 Subjects that can Introduce AI Technology Related to Video Content

procedure	subject
pre-production	Planning, storytelling, sound planning, character design, UI/UX design, trend research, etc.
Main production	Graphic design, info / motion graphics, sound production, brand design, 2D/3D product / character production, etc.
post production	Engine-based, video editing / compositing, mat painting, etc.

3.3.2 Suggestions on re-establishing capabilities and introducing curriculum for cultivating AI adaptive content talent

In the future content industry, under-

standing of new media technologies and content and performing roles as technicians and managers are required, as well as the ability to develop content using new technologies. To this end, content-related departments always need to research and operate curricula to foster talent with the skills and capabilities necessary for the future content industry. Currently, the huge revolution in Image generation AI cannot be resisted, and in order to adapt to this trend and cultivate talented people who can utilize it, the educational program is structured to provide students with more practical experience and abilities by learning theory and practice in an integrated manner and utilizing major specialization strategies. And through this, we should be able to train field-oriented content manpower. In addition, industry and academia should work together to establish an industry-academic education system and, through this, strive to acquire core competencies for efficient content development and role performance. In terms of the curriculum, it should be comprised of subjects that provide creation/production, planning/research, and practical skills by operating an AI adaptive content production curriculum using systems such as big data, artificial intelligence, and data visualization. Finally, in the new convergence era, the new technology and industrial environment should be led with the expertise and practical experience required by future content experts to re-establish the necessary capabilities and design talent

The capabilities required for AI-applied talents using image generation AI are suggested in the following six.

First, it is the fundamental production ability of content, aesthetic sense, and judgment

based on formative knowledge. Rather than considering the results of image generation AI as absolute, it should be possible to judge image information generated by AI with theoretical production ability, aesthetic sense, and formative knowledge-based judgment.

Second, communication skills. The ability to express and judge one's creative ideas, planning, and directing capabilities based on the results is important, not only to use the images derived from image generation AI as they are.

Third, it is the ability to solve real problems. High-level results can be produced only when the subject or problem of a given project can be accurately understood and appropriate prompts can be utilized.

Fourth, creativity and humanities imagination. It is to increase and maintain the ability to lead the tool with the mindset that one cannot replace one's creativity while creating the image one wants with image generation AI.

Fifth, it is the ability of image generation AI literacy. It is important to analyze and understand the results generated while using AI, continue to verify them, and create new things based on your own judgment.

Sixth, it is self-directed learning ability.

You need the ability to sensibly judge the generated results and learn about your field without relying excessively on image generation AI.

4. Conclusion

This study proposes the application and necessity of AI convergence content-related cur-

riculum, focusing on the innovation of content-related major curriculum in response to the AI transformation era and the spread of AI video content production. Currently, it is urgent to re-establish talent and innovate the curriculum to foster AI-based professionals, which is not only using AI tools, but also has the ability to understand and design the principles of AI software. Compared to the current development of AI technology and the speed of application in industrial sites, educational application and curriculum research are insufficient. Therefore, based on this study, it is expected that it will contribute to fostering experts who effectively utilize AI technology in content-related fields by expanding and utilizing educational methodology exploration, curriculum design, and teaching methods.

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■ Author Profile



Sung Won Park

Dr. Sung Won Park took Ph degree of Digital media. The thesis of her degree was development of teaching and learning model for convergence education on imaging contents.

She is a professor of Animation in College of Science Technology Convergency, Hoseo University, and actively working on the development of AI imaging contents and industrial strategies applying the 4th industrial revolution technology.



Jae Yun Park

A Student majoring in animation at Hoseo University. She is interested in children's animation and continues to conduct research and practice on it.