

NAVER CLOVA AI

CLOVA Platform Evangelist

Sang Houn Ok

CLOVA EVERYTHING, MEETS AI

Organization studying and servicing Naver and Line's AI Technology
Largest AI Organization in Korea and Japan
Continuing to accept challenges to be a leader in the global market



CLOVA Dubbing



CLOVA Note



CLOVA Chatbot

CLOVA
Contact Center

CLOVA
OCR



CLOVA DEVICES

A first machine learning presentation at DEVIEW 2013 conference

DEVIEW 2013	행사소개 ▾	프로그램 ▾	부대행사	참가등록	이벤트	10.14 MON ~ 10.15 TUE LOTTE HOTEL WORLD, SEOUL
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전체 시간표

[내 시간표 보기](#)

등록	DAY 1 : 09:00 ~ 09:30 DAY 2 : 09:30 ~ 10:00	점심시간	11:45 ~ 13:00	Coffee Break	15:45 ~ 16:15
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모바일	웹	안드로이드	개발 경험	성능	빅데이터	데이터베이스	분산시스템	웹접근성
보안	테스트	머신러닝	오픈소스	브라우저	협업	클라우드	Ubuntu	

DAY 1 / 10.14 (월)

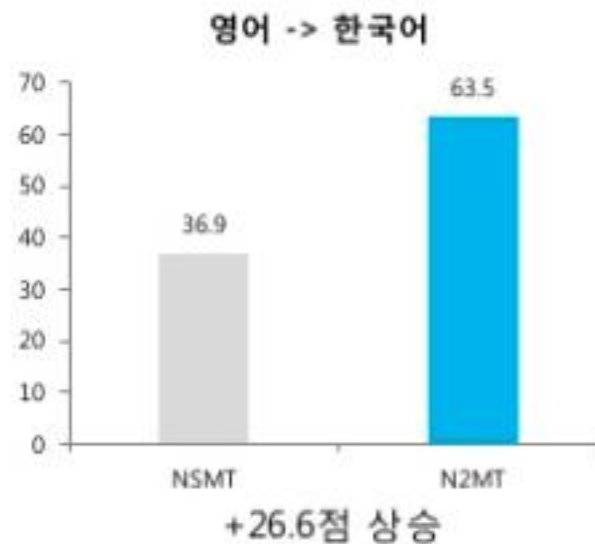
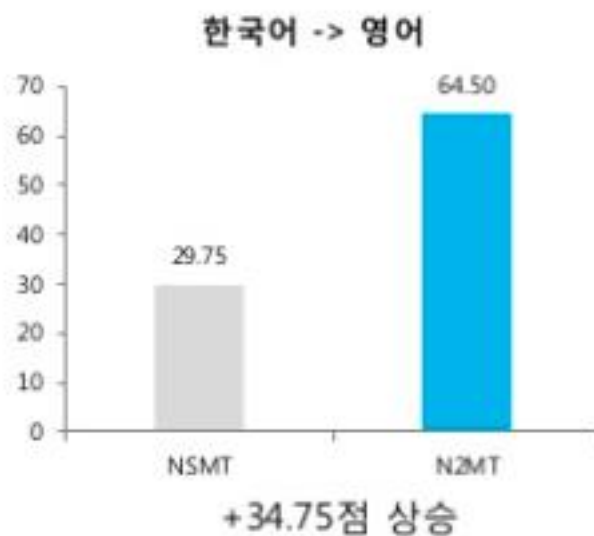
	TRACK 1 웹	TRACK 2 모바일	TRACK 3 오픈소스, 개발자 문화	TRACK 4 다양한 주제
09:30 ~ 09:50	키노트 'Unsung Hero(얼굴없는 영웅)'/송창현 NAVER LABS (다시보기, 발표자료)			

<https://devview.kr/2013/schedule.nhn>

5.4. 정성적 평가 (Human Evaluation)

DEVIEW
2016

- 평가 방법 : Blind Test
- 평가 문장 개수 : 100 문장
- 100점 만점. (평가자 2명 평균)



<https://www.slideshare.net/devview/224-backend-neural-machine-translation-67608580>

Released AI API's at NAVER Developer Center in 2016



새로운 API 추가 (beta)

[음성인식]

음성 데이터를 텍스트로 변환해 줍니다. 현재 2개 언어(한국어, 영어)를 지원합니다.



[음성합성]

텍스트를 아나운서 음성으로 들으실 수 있습니다. 현재 4개 언어(한국어, 영어, 일본어, 중국어)를 지원합니다.



[기계번역]

영어<->한국어, 중국어<->한국어, 일본어<->한국어 번역을 지원합니다.



[캡차]

자동 입력 방지를 위해 보안 문자가 포함된 이미지를 전송하고 입력 값을 검증합니다.



A Translation app named Papago — Speech Recognition, OCR, NLP, TTS



https://www.slideshare.net/devview/134papago?next_slideshow=1

CLOVA Platform, an integrated technologies : AI + Device+ Platform



CLOVA WAVE / Friends / Friends mini

Sales in Korea/Japan



NAVER CLOVA

Device and Services



CLOVA
WAVE



CLOVA Friends



CLOVA Friends mini



CLOVA
Desk



CLOVA ON



CLOVA
LAMP



Naver App

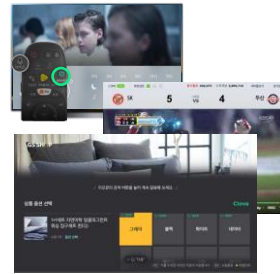


CLOVA App



Naver App

CIC 플랫폼 CLOVA Interface Connect



셋톱박스



자동차



가전제품

AI Technology Product

Chatbot	Voice	Speech
OCR	Vision	Face
Video	NSML	Text Analytics

CLOVA AI for Contact Center
CLOVA AI for Document Insight
CLOVA AI for Business Analytics
CLOVA AI for eKYC

Speech Recognition

Clova Speech Recognition is a technology that converts human speech data into text or computer-readable information.

Analyzes the waveform of a speech signal and converts human speech into text.

Speech recognition



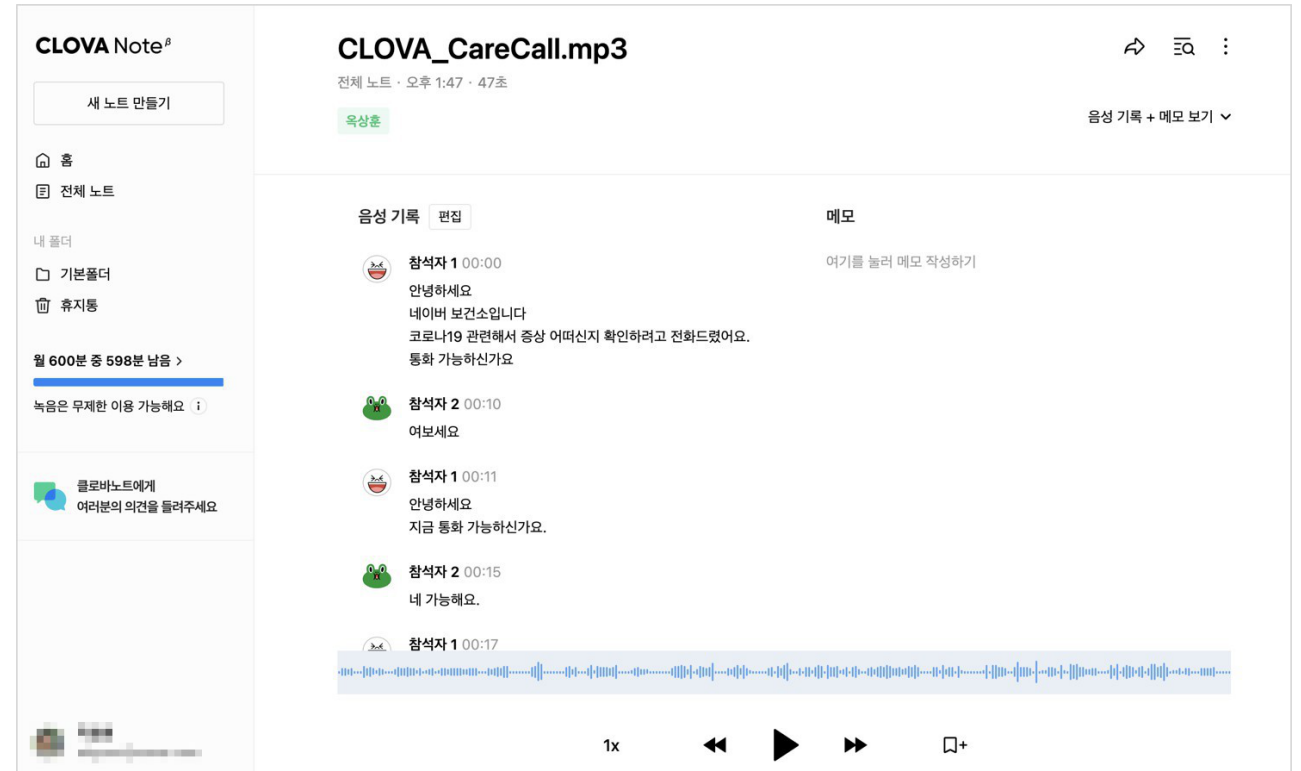
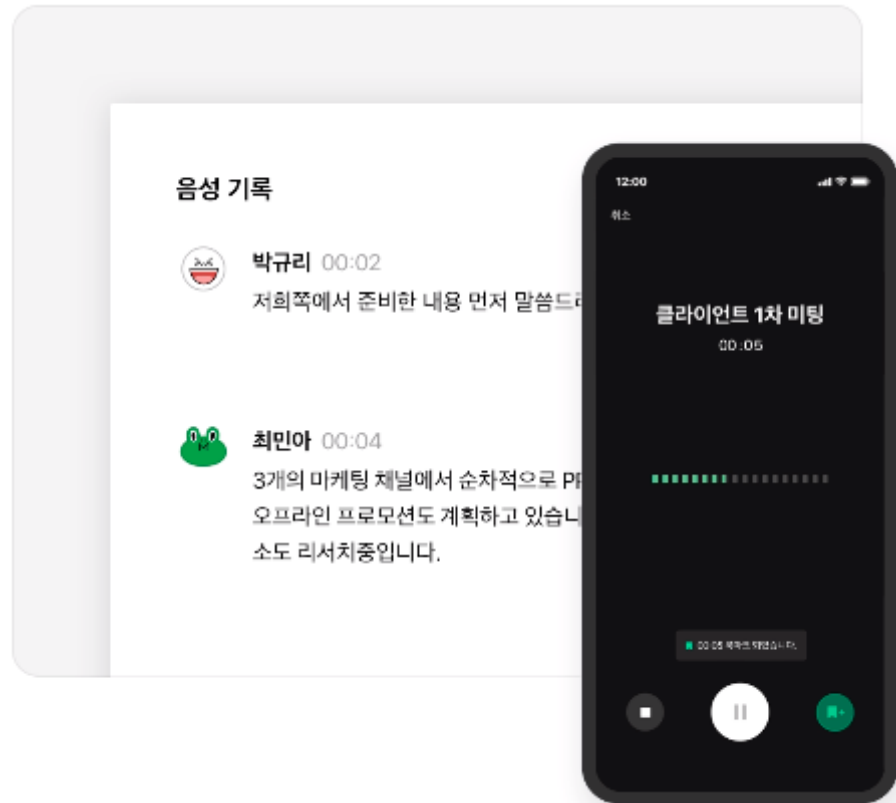
It is a technology that computer interprets human speech language and converts it into text.

Speaker recognition



It is a technology that classifies speakers by voice and provides personalized information according to the speakers.

CLOVA Note for creating meeting note



<https://clovanote.naver.com/>

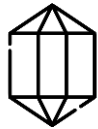
Clova Voice

Clova's speech synthesis technology, nVoice, is recognized for its world-class performance.

The nVoice feature is currently in use by Naver News, Maps, Dictionaries, and PAPAGO.

HDTS

(Hybrid DNN Text-to-Speech)



It creates the highest quality synthesized voice for specific domain.

NES

(Natural End-to-End Speech Synthesis)



It creates natural synthesized voice without domain limitations. Ideal for supporting different scenarios and domains.

CLOVA Dubbing for creating contents using TTS

The screenshot displays the Clova Dubbing web interface. At the top, it shows the project name 'Clova Dubbing' and the date '2019.09.20 18:19 저장'. The main area is divided into three sections:

- Video Preview:** A video player showing a scene with two people on a couch. The text 'Clova Dubbing' is overlaid on the video.
- 더빙 추가 (Add Dubbing):** A section with icons for different dubbing types: '대사' (Dialogue), '효과음' (Sound Effects), '배경음악' (Background Music), '자막' (Subtitles), and '전체보기' (View All). Below these icons is a text box with the following content: '백남준은 미디어 아트의 개척자로서 다양한 테크놀로지를 이용하여 실험적이고 창의적으로 작업했다. 아트의 개척자로서 다양한 테크놀로지를 이용하여 실험적이고 창의적으로 작업했다.' (Bae Nam-jun was a pioneer of media art, using various technologies to work in an experimental and creative way. As a pioneer of art, he used various technologies to work in an experimental and creative way.)
- 효과음 추가 (Add Sound Effects):** A section with a list of sound effects: '크락션' (Clack), '심장박동' (Heartbeat), '브로콜리 소리' (Broccoli sound), '박수' (Clap), and '환호' (Cheer). Each effect has a duration of 5.0 seconds.

Below these sections is a timeline with a playhead at 03:01.46. The timeline shows a video track with the text '나오코가 살고 있는 건물쪽을 바라보며, 전등이 켜 있지 않은 창문...' (Looking at the building where Naoko lives, the window where the lights are not on...). Below the video track are five audio tracks: '박수' (Clap), '심장박' (Heartbeat), '배경음악' (Background Music), '분' (Anger), and '별자국' (Different country). Each audio track has a corresponding waveform. At the bottom, there is a footer with the text 'Powered by NAVER LINE' and a navigation bar with buttons for '프로젝트 저장' (Save Project) and '다운로드' (Download).

Clova OCR

Clova OCR is a technology that locates letters in a picture and finds out which letters

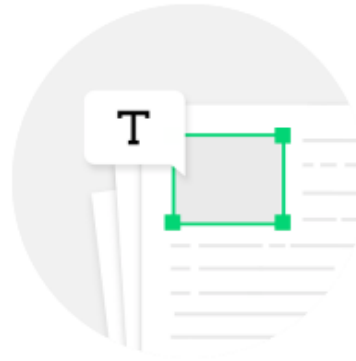
Clova has a [unique technology for detecting / recognizing different languages and different types of letters](#)

. In 2018, we reached the world level of technology by [ranking first in six categories](#) on the ICDAR leaderboard.



Detection

모든 유형의 이미지에서
자동으로 텍스트 영역을 검출



Recognition

검출된 영역에서
텍스트를 정확하게 인식



Parsing

사전 학습모델에 기반하여
문서 패턴, 유형을 자동 분류

CLOVA OCR + GAN → New Handwriting Front

Clova

2019년 나눔손글씨 글꼴

마음을 전하는 손글씨 글꼴이 더욱 다양해지고, 손글씨에 담긴 이야기가 더욱 널리 퍼져나가길 바랍니다.
앞으로 쓰여질 우리의 이야기를 응원합니다.

나눔손글씨 딸에게 엄마가

옛날에는 매운탕에 할 말을 써서 냉장고에 붙였던 추억이 있어요. 이제는 다 커버린 딸이 어찌면 잊었을지 모르는 엄마의 글씨체.

나눔손글씨 세아체

방과 초등학교 2학년 2반 3번입니다. 엄마 아빠가 회사에서 제 정성스러운 글씨체로 행복하게 일했으면 좋겠습니다.

나눔손글씨 무궁화

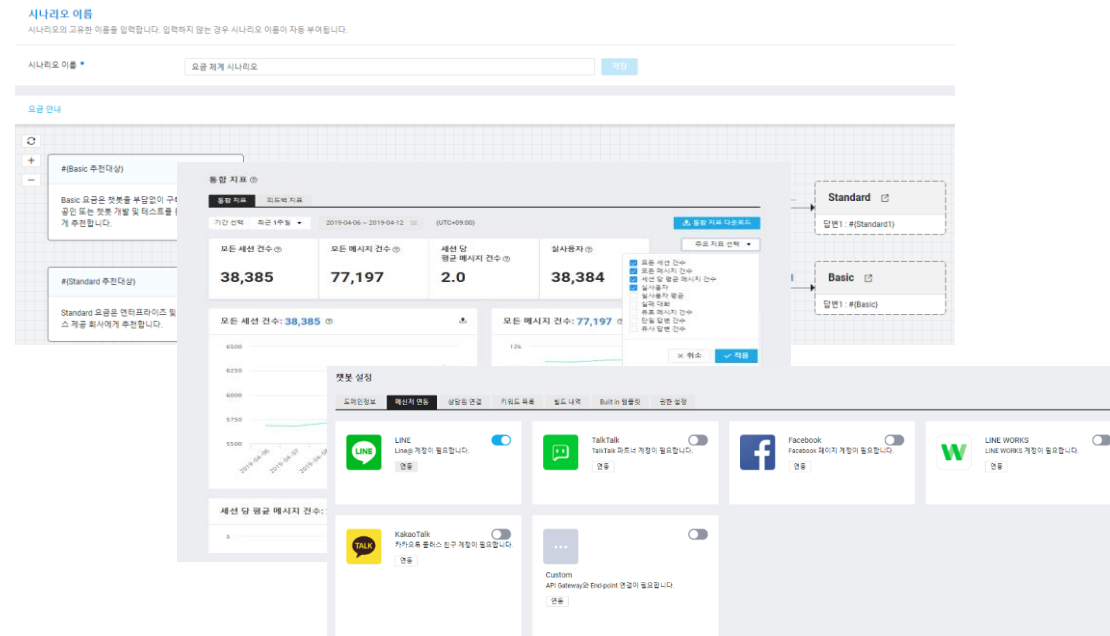
대한민국이라는 이름만 들어도 가슴이 벅찬 경찰 준비생입니다. 무궁화 꽃말처럼 일편단심 영원히 대한민국 국민이고 싶습니다.



<https://tv.naver.com/v/9730915>

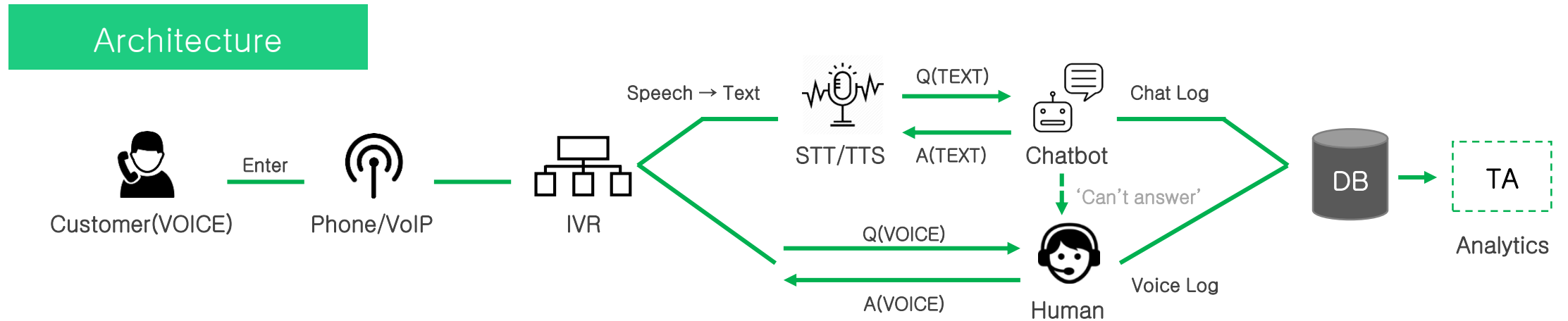
Clova Chatbot

- Clova Chatbot is an interactive AI service that identifies users' intentions and continues the conversation with appropriate answers.
- Clova Chatbot provides an engine that can understand Human language, by designing an optimal language model and developing model.
- In addition, it provides an environment in which chatbot services can be operated easily and efficiently.



Clova AI for Contact Center

- It is a solution that can complement existing customer center with AI technology or build a cloud based AI customer center, by combining various AI technologies such as chatbot, speech recognition, speech synthesis and text analytics
- In addition, the management module enables advanced management such as issuing phone numbers and integrating AI products.



CLOVA AiCall Use Case – CLOVA CareCall



의도 기반
검색하기

영화제목
맞추기

기획전
구성하기

문법 교정하기

역사
다

백과사전
문고 답하기

사투리 변환하기

비속어
필터하기

상품 리뷰
요약하기

번역하기

레시피
만들기

자동
메일

캐릭터와
대화하기

HyperCLOVA

모두의 능력이 되다

끝말잇기
게임하기

데이터
생성하기

콘텐츠 분

앱디자인
하기

셀럽 말투
따라하기

시나리오
작성하기

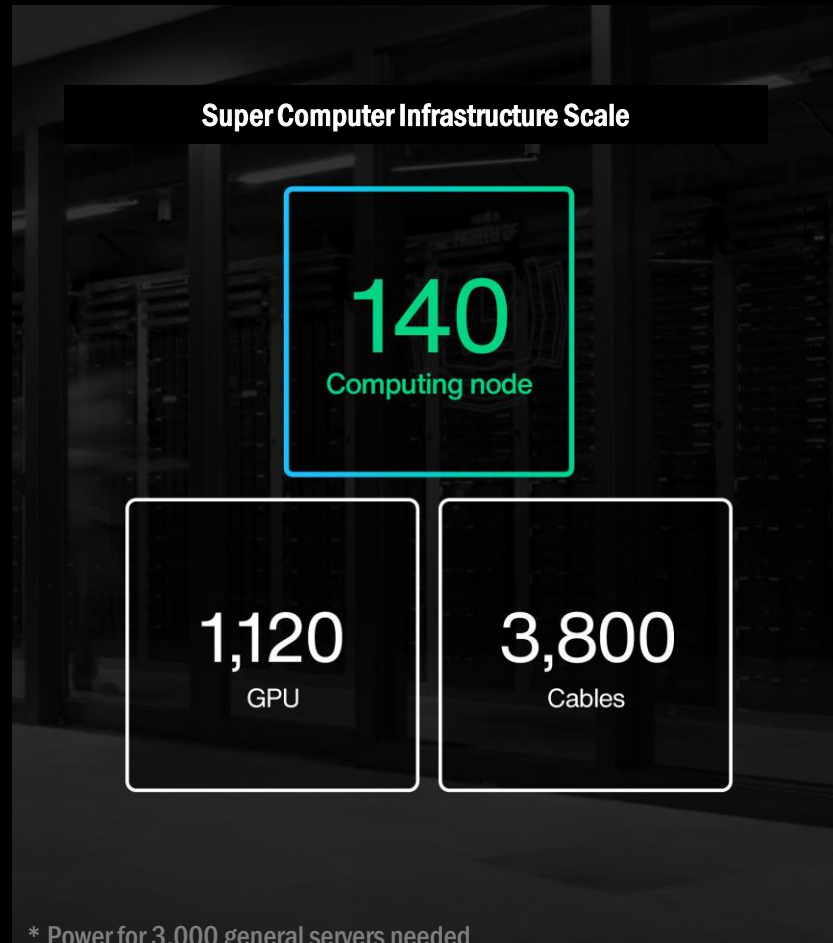
마케팅 문구
생성하기

의료 증상
구분하기

색결과
요약

NAVER BIG AI Infrastructure

Infrastructure needed for processing massive amount of data is secured.



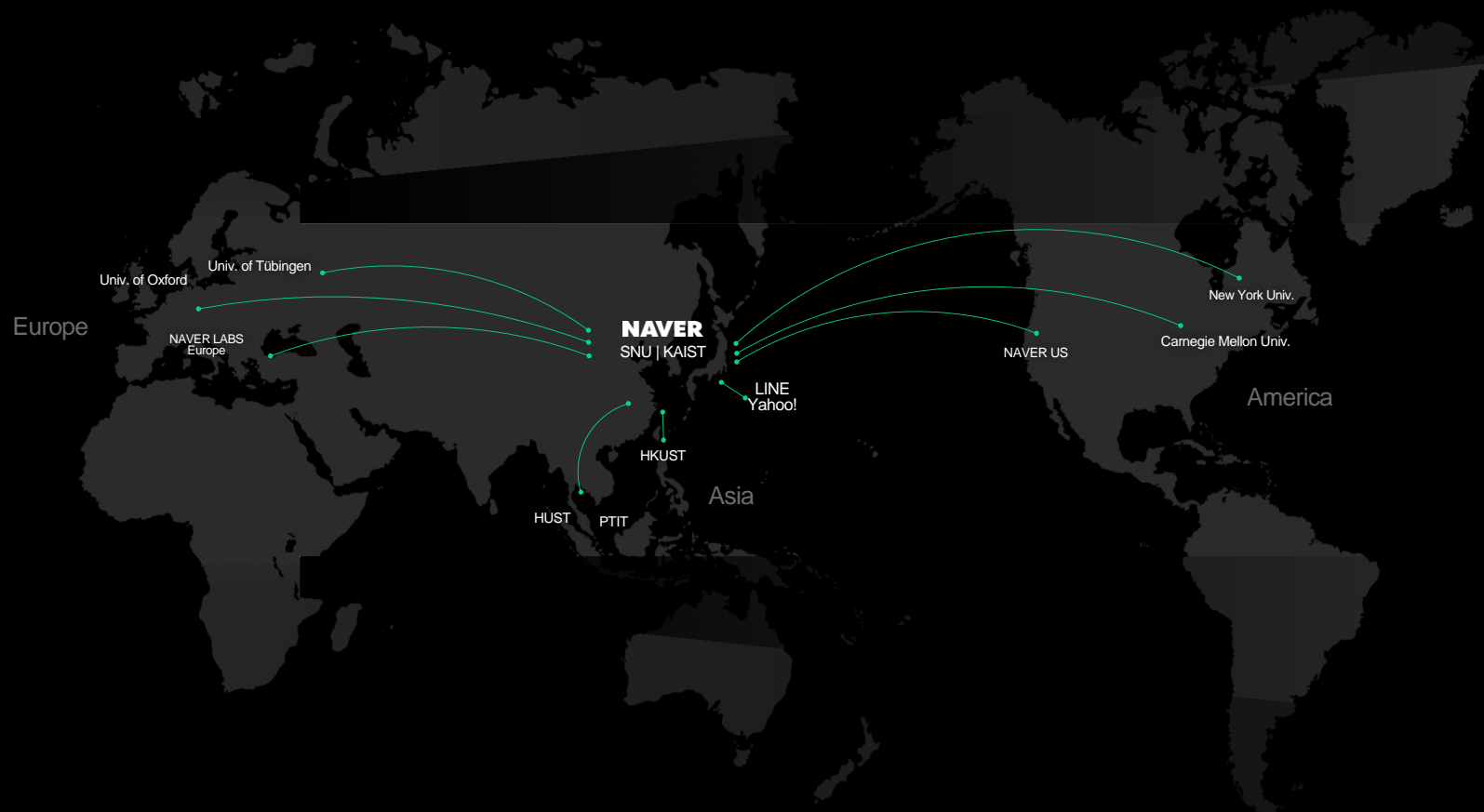
Super Computer Performance

Global
Ranking
TOP 500

- Korea's only 700 PetaFlops-level AI computer

Establishing Global AI Research Ecosystem

HyperCLOVA established a Global AI R&D Ecosystem and is proceeding with co-research with numerous countries.



Thank you