

Case Studies



Domain-Specific BERT Innovates Business Use of NLP

The performance of large-scale AI models has seen massive improvement, driving increased competition. As applications are being explored that leverage these models, the natural language processing (NLP) industry has begun to examine business applications for Financial BERT (Bidirectional Encoder Representations from Transformers), an AI language model developed by NTT DATA for the financial industry. Based on NTT BERT, which was built by NTT Laboratories using one of the largest Japanese-language text datasets in Japan, Financial BERT has learned financial text data uniquely compiled by NTT DATA. It eliminates the need to build domain-specific dictionaries or rules when analyzing documents that contain financial jargon or finance-specific context. This reduces the AI building process, while enabling highly accurate results.

We are now building an infrastructure upon which optimized versions of BERT (initially as Japanese-language models) can be easily created for domains beyond finance. It will handle processes ranging from domain-specific data collection to model building, enabling these models to be applied to business practices.

Data Collaboration Technology Securely Integrates Learning Data

As the value of data-driven business rises, the use of AI across industries is furthering optimization and creating new opportunities. Meanwhile, concerns over leaks of confidential information are also increasing, necessitating a security-backed data collection technology.

NTT DATA is working with academic institutions to develop a data collaboration technology that assures that each organization can keep its own information private while integrating with each other's data to build a highly accurate model. This technology works by converting confidential data to unreadable and neutral formats. This enables the creation of models that use learning data containing more variations and attributes, thereby producing more accurate AI models. The technology also uses fewer computing resources than other distributed learning methods, lowering the implementation threshold and making business application easier.

Cross-industry data use will only grow. NTT DATA is actively engaged in the development and deployment of collaboration technology to accelerate this trend and create new value.

This data collaboration technology uses the results of a project consigned to the New Energy and Industrial Technology Development Organization (NEDO).

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NTT DATA Technology Foresight 2021



LOOKING AHEAD: Technology Trends Driving Digital Innovation

NTT DATA R&D experts continuously analyze real-world case studies and other sources to identify the most significant technology and societal trends that we believe will drive change over the next three to ten years. The Information Society Trends provide our perspective on the evolution of society and business. The Technology Trends summarize our views on innovative technologies and their impact on the world.

Information Society Trends



IST 01

Growth of a Seamless World

IT will become seamlessly woven into all facets of people's lives, with online and physical activities valued equally. In this "online-first society," people, companies and governments will realize the value in blending these activities to improve productivity, solve social problems, develop disruptive scientific solutions and maximize growth.



IST 02

Individual-Centered Design

Competition will drive service providers to deliver tailored experiences based on each customer's context, time and location. This trend toward personalization will come into conflict with online user privacy and security concerns. Service providers will have to address these personal-ID issues to enable personalization while protecting users' privacy.



IST 03

Forge New Norms

IT and society will come into conflict as the pace of technology adoption outruns efforts to solve issues that may arise from it. AI-related issues and growing online crime will endanger technological enhancements. Service providers will need to build trust by collaborating with governments to establish and implement new norms.

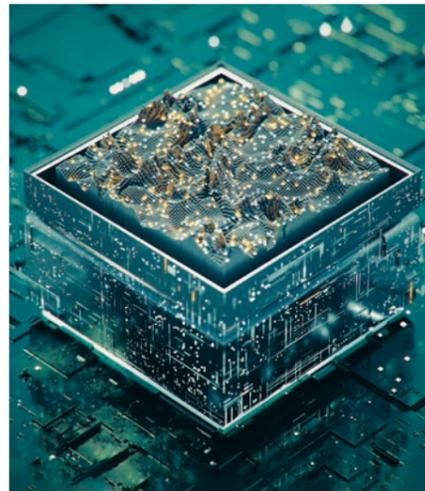
Technology Trends



TT 01

The Transformative Power of AI

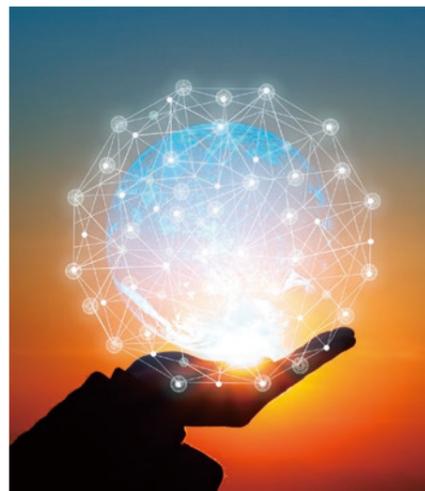
The continuing growth of AI has led to advancements in increased model size and performance. These innovations are being applied to commodity AI research. Technologies supporting new AI uses will emerge, including efforts to improve learning data preparation. AI will evolve from a purpose-built tool to a broader exploratory technology.



TT 02

The Complication of IT Infrastructures

As AI dramatically increases hardware and network performance requirements, it is driving innovations in miniaturization, new materials and processing methods – and a move to purpose-built, software-specific hardware designs. In supporting these challenging innovations, cloud service providers will develop expertise and lead the way on best practices.



TT 03

Software-Driven Evolution

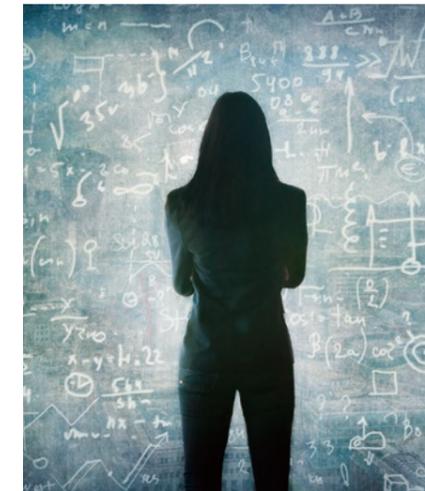
Competition among service providers will focus on delivering differentiated customer experiences through software. Manufacturers will rely on software to increase product value and accelerate deployment. Accordingly, companies will seek AI tools to increase productivity and new organizational structures to drive continuous improvement.



TT 04

The Growth of Consolidated Data

Data collection and analysis are essential for effective planning and decision-making in an increasingly data-driven society. As this trend accelerates, technologies that integrate data and perform cross-sectional analysis will improve, as will technological counter-measures to protect privacy.



TT 05

Simulation Takes on New Challenges

IT-based simulation has become increasingly accurate, expanding its application in automobile design, drug development and other fields. AI will make it easier for simulations to mimic reality while helping reduce calculations. Finally, by supporting the discovery of new materials and proteins, AI will enable new paths in research and development.



TT 06

Distance Accelerates Automation

Technologies that capture human work and automate those tasks are proven to increase productivity for remote workers. By enabling AI to learn as an apprentice does by observing a master – and eliminating the need for step-by-step programming – these technologies are bringing AI to new applications and automation opportunities.