

Smart Production

Intelligent Program Production

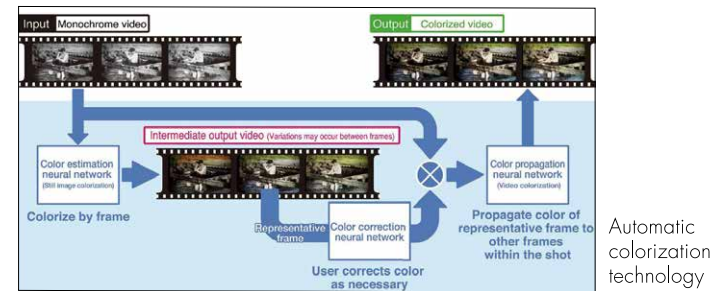
We are engaged in R&D on video analysis, speech recognition, social media analysis and others using AI technologies in order to collect and analyze a vast amount of diversified information and support program production more effectively.

Universal Service

We are engaged in research on technologies to provide audio information through captions or sign language as well as video information through audio guides or physical object forms, in order to convey information universally to all viewers, including people with visual or hearing impairments and foreign speakers.

Automatic colorization technology for monochrome video

As black and white video footage archived by broadcast stations are invaluable resources, the demand for colorizing and using them on TV programs is growing. We have been conducting research on the technology to automatically convert monochrome film into color videos by using neural networks, which have been used on NHK Special and other programs.



Transcription system using speech recognition

We are developing speech recognition technology to quickly and accurately transcribe comments in collected program footage. This technology supports rapid program production in tasks such as creating broadcast manuscripts and editing video footage based on the content.



Social media analysis technology

We are developing techniques to analyze social media and online information in real time and to automatically extract useful information. The technology also makes it possible to identify information with high news value, and automatically generate news articles from river information.



Automatic Sign-Language CG system

We are conducting R&D on a technology to automatically generate sign-language computer graphic (CG) animations to broaden the range of broadcast services available to people with the hearing impaired. We launched a sign-language CG evaluation site that streams weather information videos for the seven prefectures in the Kanto region.



Sign-language CG evaluation site for weather information

Audio description generation technology

To enable visually-impaired people to fully enjoy our broadcast services, we are engaged in R&D on audio descriptions. It is a commentary broadcast service that automatically supplements information that cannot be conveyed without watching the TV screen, using synthesized speech.



Audio description service

Diverse Vision -Future media technology envisioned by STRL-

Around 2030–2040, we expect that in addition to smartphones and tablets, AR/VR devices, haptic devices, and other devices will be widespread among viewers and that the ways in which they engage with programs and content will be even more diverse than they are now. STRL's research will aim to realize a "diverse vision," which is a new concept in broadcasting and the related services that will allow anyone to view and experience a variety of content using their favorite devices regardless of time or place.

Novel program production technologies

To enable diverse forms of expression for program producers and different ways to enjoy content for viewers, a variety of information on each subject will be used for program production. To that end, "meta-studio" technologies will be used, in which video/audio is not merely shot/recorded, but in which detailed information on the subject's shape in three dimensions, its texture, touch, and resonance of voice and sound are acquired. New video processing technologies using visual effects (VFX) and super-resolution technology will be exploited. In addition, AI technology will be proactively introduced to simplify the production of high-quality content. Important scenes will be automatically extracted and edited via video/audio analysis. AI will also be utilized to generate metadata such as closed captioning and production data and to produce programs using accumulated know-how and previously gathered material.



Meta-studio

Diversifying viewing style

The "diverse vision" involves broadcasting in a unified format that does not depend on the content type or the display/playback device so that anyone can view and experience programs with SHV, 3D television, AR/VR and the like. Since the same content can be adapted to be played on devices with different specifications and in different viewing environment, the viewer does not need to be aware of their viewing styles to enjoy the content. For example, a viewer in his or her living room at home, enjoying a full-featured 8K SHV with a large sheet-type display, can at the same time watch a scene of special interest from various angles on a table-type or portable 3D television. Furthermore, if the viewer wears a head-mounted display or a device that reproduces haptic senses, the viewer can watch the same content from either a performer's or the audience's perspective, or feel the shape and hardness of an object.



Future living room

International Standardization

Aside from the Association of Radio Industries and Businesses (ARIB) and other organizations in Japan, NHK STRL has also been contributing to international standardization initiatives, including the International Telecommunication Union (ITU), the Society of Motion Picture and Television Engineers (SMPTE), and the Moving Picture Experts Group (MPEG). For example, the Japanese standards ISDB-T for digital terrestrial television broadcasting, ISDB-S for digital satellite television broadcasting, and HDTV program production standards are being recommended by the ITU Radiocommunication Sector (ITU-R). For 8K Super Hi-Vision, we have also gained recommendations for a wide color gamut, high frame rate, high dynamic range video system, in addition to a 22.2 multichannel sound system and the ISDB-S3 satellite broadcasting transmission system, among others. We will continue to work steadily toward the international adoption of 8K broadcasting.

Contributing to Society

Many of the achievements by NHK STRL are open to the public. We welcome anyone taking advantage of our patented technologies and other expertise. To date, the fruits of our R&D have been widely used in areas of society other than broadcasting-related fields. They have been applied in medical imaging, architecture and other industrial fields, and have also been used in education and museums.

International Cooperation

International cooperation in the field of research has become ever more important. NHK STRL has introduced various studies and achievements at international conferences while promoting joint research by sending our staff to universities, research institutions, and corporate labs abroad. We promote research into next-generation broadcast technology through the Broadcast Technology Future (BTF) group, a group of broadcasting research organizations that includes the British Broadcasting Corporation (BBC). Furthermore, we play a major role in the ABU (Asia-Pacific Broadcasting Union), welcoming many researchers from fellow member broadcasters. We also cooperate with the worldwide deployment of the Japanese standard ISDB-T for digital terrestrial television broadcasting. As of March 2019, it has been adopted in 20 countries, including Japan and Latin American countries.