November 2018 Vol. 16 No. 11
NTT Technical Review 11 2018
https://www.ntt-review.jp/archive/2018/201811.html

View from the Top
- Kazuhiro Yoshizawa, President and Chief Executive Officer, NTT DOCOMO

Front-line Researchers
- Ryuichiro Higashinaka, Senior Distinguished Researcher, NTT Media Intelligence Laboratories

Feature Articles
Further Exploring Communication Science
- Shift to New Dimensions—Further Initiatives to Deepen Communication Science
- SpeakerBeam: A New Deep Learning Technology for Extracting Speech of a Target Speaker Based on the Speaker's Voice Characteristics
- Network Reliability Optimization by Using Binary Decision Diagrams
- Ukuzo—A Projection Mapping Technique to Give Illusory Depth Impressions to Two-dimensional Real Objects
- Cross-media Scene Analysis: Estimating Objects' Visuals Only from Audio
- Measuring, Understanding, and Cultivating Wellbeing in the Age of Technology

Regular Articles
- High-speed Avalanche Photodiodes toward 100-Gbit/s per Lambda Era

Global Standardization Activities
- Telecom Infra Project—Its Structure and Activities

Information
- Event Report: NTT Communication Science Laboratories Open House 2018

Short Reports
- Ultrahigh-speed Integrated Circuit Capable of Wireless Transmission of 100 Gbit/s in the 300-GHz Band

View from the Top

Kazuhiro Yoshizawa, President and Chief Executive Officer, NTT DOCOMO

▼Overview

With its sights firmly on the 5G (fifth-generation mobile communications networks) era, NTT DOCOMO has achieved a gigabit-capable mobile network by increasing its effective download speed by 1.5 times over the previous year. Breaking away from its traditional image of a mobile and smartphone company, NTT DOCOMO has strived to improve its long-term corporate value and to create a safe and secure, comfortable, and richer society. We asked Kazuhiro Yoshizawa, President and Chief Executive Officer of NTT DOCOMO, about his outlook and aspirations based on the Medium-Term Strategy 2020 known as "Declaration beyond."

Front-line Researchers

Ryuichiro Higashinaka, Senior Distinguished Researcher, NTT Media Intelligence Laboratories

▼Overview

The spread of smartphones and artificial intelligence (AI) systems that speak means that the opportunities for general users to come into contact with AI are increasing. Under these circumstances, NTT has continuously gained attention in announcing pioneering technologies in the fields of question answering functions and language processing. We visited Ryuichiro Higashinaka, Senior Distinguished Researcher at NTT Media Intelligence Laboratories, and asked him about the progress and outlook of his research, his attitude as a researcher, and how the development of AI and a future in which robots and humans can talk smoothly will bring about changes in our society.

Feature Articles
Further Exploring Communication Science

Shift to New Dimensions—Further Initiatives to Deepen Communication Science

▼Abstract

NTT Communication Science Laboratories aims to realize communication that *reaches the heart*, from person to person, and between people and computers. We are building fundamental theories in pursuit of the essence of people and of information, and working to create core technologies that will transform society. This article introduces some of our initiatives to push deeper in communication science, in areas including speech and audio processing, dialogue processing, human information science, sports brain science, and machine learning and optimization.

Regular Articles

High-speed Avalanche Photodiodes toward 100-Gbit/s per Lambda Era

▼Abstract

We have developed an avalanche photodiode (APD) in an effort to achieve 100-Gbit/s operation with a single wavelength (100-Gbit/s/lambda). The APD features a gap-grading layer and was set between the absorber and avalanche layers. It achieved an operating bandwidth of 42 GHz in low-gain conditions. An optical receiver made with the APD demonstrated 106-Gbit/s 4-level pulse amplitude modulation operation and 40-km optical amplifier-free transmission over a single-mode fiber under assumption of a KP4 forward error correction threshold.