News

2004 NEC Technology Forum

NEC holds the "NEC Technology Forum," which acts as a venue for lectures and discussions targeting core technological fields in the IT industry and involving the world's top experts in industry, government, and academia. Through these activities, the Forum aims to contribute to the development of related fields of technology, and of industry in general.

The "2004 NEC Technology Forum" was held at the ANA Hotel Tokyo over two days, on March 29 (Monday) and 30 (Tuesday), based on the theme of "Exploration Towards Dependable Internet," with attendance of 216 people.

Over the past ten years, the Internet has undergone startling developments as a result of its open, best-effort, global characteristics. Mobile Internet in Japan has secured a position as the world's leader in terms of both quality and capacity. Even in fixed access, Japan has achieved the world's most inexpensive fee systems amid competition among a wide range of access providers offering ADSL, FTTH, CATV, and other access media. The performance-to-cost ratio of personal computers continues to improve at a pace that surpasses Moore's Law, and we are already witnessing an era in which the average user can enjoy functions that rival the large-scale servers of a decade ago, without even being aware of it. Now, we are about to witness the birth of a new age — one in which these functions are "Always On," and available as a huge system that integrates IT and networks. Even though we will be completely unaware of the immensity of these systems, they will gradually displace many of our familiar public infrastructures,

Photo 1 Key note address by Ms. Seiko Noda (Member of the House of Representative).

Photo 2 Opening remarks by Professor Mitsutoshi Hatori (Univ. of Tokyo).

Photo 3 Opening remarks by Hajime Sasaki (Chairman of the Board, NEC).

Photo 4 Luncheon.

Photo 5 Panel discussion.

Photo 6 Closing remarks by Mineo Sugiyama (Senior Executive Vice President and Member of the Board, NEC).

and will continue to steadily change our lifelines.

On September 11, 2001, New York suffered a great tragedy and experienced an unimaginable panic. On January 17, 1995, the "myth of safety" in Japan crumbled with the Kobe Earthquake. For us, Internet-based integrated IT/network services are already subject to a long list of problems and pitfalls. Familiar examples include frequent PC hang-ups resulting from unexpected, long-term operation failures, along with the threats of SPAM, viruses, and Internet crime. The indicators reminiscent of 9/11 are too numerous to count. If this is the case, then we must waste no time in turning our attention to the vulnerabilities that permeate the current cheap and comfortable environment.

The goal of this NEC Technology Forum is to focus on this issue, approaching this problem from a variety of perspectives — that of users, system managers, administrators, vendors, and those in interdisciplinary fields — transcending the boundaries of cultures and nations to achieve further development of Integrated IT/Network Services that will become the true lifelines of the future.

By hosting this Forum, NEC hopes to contribute in some small way to the development of related industries.

Research Planning Division

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NEC Develops 3D Face Recognition Algorithm that Realizes World's Most Accurate Personal Identification System

NEC has succeeded in the development of a novel 3D face recognition algorithm that realizes the world's most accurate personal identification system. The algorithm uses GIB (Geodesic Illumination Basis) descriptors* as registered data, which is calculated from 3D facial data, enabling optimal description of various pose and illumination changes. This results in superior identification accuracy essential to real world application of facial recognition technology.

The features of this technology, in comparison to NEC conventional models, are as follows:

1) NEC has developed a matching method that identifies and highlights individual facial characteristics of 2D images and compares them with 3D and GIB facial data achieving 24 times better accuracy†.

2) Processing time of data comparisons between 2D and 3D facial images is trebled due to NEC's own IOF (Ideal Optical Flow) method‡.

3) The new algorithm realizes the world's most accurate personal identification matching rate of 96.5%, even under very severe environmental conditions that cause changes in illumination and pose. (Tests were conducted using a database with registered 3D facial images of 1,000 people.)

Conventional 2D facial image recognition technologies typically compare registered 2D facial image data with live 2D facial image data. This can lead to unstable matching results due to the deviation in environmental conditions (such as light and posture) when the images are captured. This has been a huge barrier to accurate personal identification to date. The new NEC 3D facial recognition algorithm, has not only solved this problem, but has also succeeded in achieving greater accuracy under severe environmental conditions.

Interest in biometrics is growing on a global scale due to increasing security concerns and unstable social conditions. NEC will continue further development of this new 3D facial recognition technology to realize more flexible and even more superior real world applications.

This achievement was demonstrated at CEBIT in Hanover, Germany from March 18 to 24, 2004, and at the General Conference of The Institute of Electronics, Information, and Communication Engineers, held at Tokyo Institute of Technology, Japan from March 22 to 25, 2004.

Research Planning Division

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*GIB (Geodesic Illumination Basis) descriptors describe differences in illumination on the skin.

†In 2000, NEC announced an accuracy matching rate of 96.1% out of a database of 42 registered people. 24 times better accuracy refers to tests (72,000 trials) carried out on a database of 1,000 registered 3D images that obtained a 96.5% precision rate.

‡IOF (Ideal Optical Flow) is a method to estimate the amount of movement between the registered 3D image and the live 2D image.

NEC's Mobile Terminal Business Strategy in China
— Introducing Flagship Models, World's Smallest, Slim-
mest, Card-Shaped, Camera-Equipped Mobile Phone and
Pendant-Shape Mobile Phone —

On March 18, 2004, NEC Corporation announced the launch of a variety of new stylish mobile phones in China, where is the world's largest mobile phone market. With its leading position in mobile Internet technologies and high-value-added mobile Internet terminals already established in other areas of the world, NEC has rapidly expanded and strengthened its presence in China. NEC has launched about ten models in China since January 2003, and plans to introduce more than 20 models with more variations in high-end category this year.

"With 270 million subscriber base, China is one of NEC's most important markets where NEC can demonstrate its full competence," said Koji Yamasaki, General Manager of NEC China Mobile Terminal Business Division, a newly established unit that promotes NEC's mobile business in China, including marketing, product planning and product development. In 2003, NEC gradually organized business structures in China by effectively combining its resources in Japan and China and those of its partners. For example, "STEP Technologies," a joint venture mobile phone design and development company established jointly with China's largest design house group "Techfaith Wireless Communication Technology." NEC China Mobile Terminal Business Division will play a central role in leading NEC's global SCM; promoting local development and branding; raising its presence in the market; and pursuing further cooperation with mobile operators to develop most appropriate products that fit the services of mobile operators.

In the 3G global market, NEC aims to obtain 15% market share and to become one of world's top 3 vendors in 2005... In China, NEC also targets to attain the same leading position.

On that day NEC introduced three new models for the China market. The world's first card-shaped, camera-equipped mobile phone is its flagship model in China. NEC's own cutting-edge technology enabled an ultra-compact, attractively packaged mobile phone boasting measurements of 85(W) × 54(H) × 8.6(D)mm, and a light weight of 70g. This mobile-Internet product supports GSM/GPRS, and is equipped with a 1.8 inch (120 × 160 dot) TFT color display and a digital camera (300,000 pixels). Loaded with 40-polyphonic ring tones, and installed with camera functions including a mobile light and consecutive shooting ability, this phone is used together with an earphone and a mike.

"This world's smallest and slimmest mobile phone "N900" is a symbolic flagship product representing NEC's leading position in mobile terminal technology," said Yamasaki of NEC. "NEC will continue to offer new, innovative mobile terminal solutions, which offer compact shape and employ latest product technologies. We aim to offer users an opportunity to use a variety of mobile phones for different occasions." Together with NEC in Japan, the Mobile Terminals Business Division based in Beijing, China, has significantly contributed to product planning and to enabling this competitive product to be brought to the market.

The pendant-shaped "N910" is aimed for female users. The measurement of 52(W) × 57(H) × 21.2(D)mm and a light weight of 76g, the phone is equipped with 300,000 pixels digital camera, 64 polyphonic ring tones and supports motion JPEG video filming for 15 seconds. The very fashionable terminal's back-end LCD can be utilized as a mirror.

"N 820" represents NEC's traditional and stylish clam-shell shape and high functionalities. It is equipped with QVGA LCD display (2.2 inch, 320 × 240 pixels) and 300,000 pixel digital camera.

Corporate Communication Division

Photo 1 "N900."   **Photo 2 "N910."**   **Photo 3 "N820."**