PCS2010

28th Picture Coding Symposium

December 8-10, 2010

Nagoya, Japan

Sponsors

Picture Coding Symposium of Japan and Image Media Processing Symposium
The Telecommunications Advancement Foundation
Nagoya Convention & Visitors Bureau

Technical Co-sponsors

IEEE Signal Processing Society (IEEE SPS)
The Institute of Electronics, Information and Communication Engineers (IEICE)
Information Processing Society of Japan (IPSJ)
The Institute of Image Information and Television Engineers (ITE)

Contents

Welcome from the General Chair

I am very pleased to welcome you to Nagoya for the 28th Picture Coding Symposium. PCS has been the premier international symposium devoted to advances in image and video coding since 1969. PCS 2010 is the 4th PCS held in Japan. It has been 20 years since the last PCS was held in Tokyo in 1991. Meanwhile, we have been holding PCSJ (PCS Japan) as the domestic annual symposium on the same topics since 1987. The scope of PCSJ was extended to include image processing and the joint symposium Picture Coding Symposium Japan / Image Media Processing Symposium (PCSJ/IMPS) started in 1997. One of the roles of PCSJ/IMPS is to host PCS when it comes to Japan. Now, the time has come, and PCS 2010 in Nagoya is organized under the full support of the committee members of PCSJ/IMPS.

PCSJ/IMPS is held jointly with PCS 2010 this year. This is a one day workshop WPCIP (Workshop on Picture Coding and Image Processing) on Tuesday. PCS 2010 itself is held from Wednesday to Friday. PCS 2010 has chosen "FTV/3DTV" and "Beyond H.264/MPEG-4 AVC" as its main topics. Paper submissions not only of image coding but also relevant image processing have been accepted. In the age of FTV/3DTV, image processing and image coding are related to each other more closely than before. For example, FTV/3DTV needs view synthesis processing after decoding.

This year we accepted 152 papers out of 256 submissions from 27 countries. We sincerely thank all authors for high quality submissions. The PCS 2010 program consists of 3 keynote speeches, 2 special sessions, 2 panel discussions, 2 tutorial sessions, 3 oral sessions, and 4 poster sessions. The special sessions, oral sessions and poster sessions are constructed by the accepted papers except 1 invitation-based special session. To keep the PCS tradition of having a single track program, the number of oral presentation is kept very limited. Please note that there is no difference in terms of the quality between oral and poster presentations.

We will have a keynote speech every morning on Wednesday to Friday. Wednesday morning's keynote speech "Research and Activities on Ultra-Realistic Communications" will be given by Dr. Kazumasa Enami, National Institute of Information and Communications Technology (NICT), Japan. On Thursday morning, we will hear "Decoding Visual Perception from Human Brain Activity" by Dr. Yukiyasu Kamitani, ATR Computational Neuroscience Laboratories, Japan. Our final keynote speech, "Advances in Video Compression", will be given by Prof. Thomas Wiegand, Fraunhofer-Institute for Telecommunications, Heinrich-Hertz-Institut, Germany on Friday morning.

Our special session topics are "3DTV/FTV" and "Beyond H.264/MPEG-4 AVC". Speakers are invited for the special session "3DTV/FTV". Each of our special sessions will be followed by a panel discussion on the same topic for further discussions in an open atmosphere.

Our tutorial sessions are "Evolutive Video Coding", to be given on Thursday morning by Dr. Seishi Takamura, NTT Cyber Space Laboratories, NTT Corporation, Japan, and "Quality Assessment for Image Compression Purpose", to be given on Friday morning by Prof. Chaker Larabi, University of Poitiers, France. Topics of 3 oral sessions are "FTV", "Depth Map Coding" and "New Techniques for Video Coding".

We have 4 poster sessions. Papers of each poster session are categorized into 5 topics, "3DTV/FTV/multi-view-related topics", "Beyond H.264/MPEG-4 AVC and related topics", "Image/video

coding and related topics", "Image/video processing and related topics" and "Quality, system, applications, and other topics".

The social events we have planned include a reception on Tuesday evening, a welcome party on Wednesday evening and a banquet on Thursday evening. We hope these will give everybody a chance to interact in a more informal setting.

While enjoying the technical program, please also enjoy your stay in Nagoya. Nagoya is located at the center of Japan and has strong historical, cultural and industrial identities. Atsuta Shrine has been preserving the Sacred Sword " Kusanagi no turugi ", one of the Three Sacred Treasures symbolizing the Imperial Throne for two thousand years. The Nagoya Castle with the two golden dolphins on the roof is the symbol of Nagoya, although it was lost during World War II and rebuilt.

This year marks the 400th anniversary of the start of Nagoya City. In 1610, Shogun Tokugawa Ieyasu ordered to move the castle in Kiyosu to Nagoya. Since then, Tokugawa Shogun family governed this city and encouraged the growth of cultural arts such as Noh & Kabuki, Nihon Buyo (Japanese Dance), tea ceremonies, and flower arrangement. You can enjoy all these traditional Japanese arts in Nagoya. One of the Kabuki performances will be introduced during the banquet.

Today, Nagoya also has the face of a high-tech city. Many industries such as automobiles, aviation, machinery, fine ceramics and industrial robots are based in and around Nagoya. Although Nagoya is a large city with a population of 2.2 million, it still keeps the country-style warmth.

At the end, I sincerely thank all participants for their support. I would also like to express my gratitude to the members of the Organizing Committee and the International Steering Committee, reviewers and all concerned for their contributions to the success of this exciting symposium. I hope everyone will enjoy PCS 2010 and the city of Nagoya.

Masayuki Tanimoto

General Chair of PCS2010

About Nagoya

Nagoya, with a population of 2.2 million, is situated in the center of Japan. Its location makes it an ideal venue for convention. It is a city with strong cultural, historical and industrial identity. Nagoya's history began with Nagoya Castle, built by the famous Shogun Tokugawa Ieyasu in 1612. Since then, his successors encouraged the growth of cultural arts such as Noh & Kabuki theater, Nihon Buyo (Japanese Dance), tea ceremonies, and flower arrangement. All traditional Japanese arts are enjoyed in Nagoya today. Many of Japan's world-renowned high-tech industries; those of automobiles, aviation, machine tools, fine ceramics and industrial robots, are based in and around Nagoya. Yet, what really sets Nagoya apart from other cities is our blend of country-style warmth and big city feeling atmosphere.

Samurai culture, cultivated alongside the magnificent castle

Oda Nobunaga, Toyotomi Hideyoshi and Tokugawa Ieyasu, famous warlords of the Age of Civil Wars who led Japan's unification, all have roots in this area and are called "three great heroes". They dreamed of dominating the whole country; and led to the flourishing of samurai culture. The area around Nagoya has seen many historical dramas. Atsuta Shrine stores Kusanagi no mitsurugi, a sacred sword believed to have been wielded by an ancient legendary hero, Yamatotakeru-no-mikoto. Near the shrine is the presumed birthplace of Minamoto no Yoritomo, who established the Kamakura Shogunate. Today's Nagoya City originated about 400 years ago, in 1609, when Tokugawa Ieyasu moved the whole town of Kiyosu to this area, and built the castle tower crowned with gold dolphins and organized the houses in a grid. Ever since, the city has made great strides, maintaining the legacy of the samurai culture that once flourished.

Craftsmanship fostered in a peaceful town with rich resources

Many craftsmen moved to the big city of Nagoya, where their manufacturing skills were improved. These skills were passed down to the modern industry. Located midway between Edo and Kyoto/Osaka, Nagoya has served as a transportation hub since ancient times. With the fertile soil of the Nobi Plain, rich seafood from Ise Bay and high quality timber from the upper drainage of the Kiso River, Nagoya had great potential for development when it was established. The area also has Nagoya Castle, built with the support of the powerful Tokugawa Family. The castle's Hommaru Palace, which is being restored, was said to be the best castle palace in those days. As the town was established, various craftsmen came and improved their skills. Techniques for making Japanese traditional clocks were later applied to the manufacturing of karakuri mechanical puppets, and passed down all the way to the modern industry after Japan became a modern state. These techniques and the spirit of manufacturing are now employed in such fields as aerospace, transportation and fine ceramics, industries that will lead Japan's future development.

Unique cuisine created in pursuit of delicious food

The rich variety of ingredients made available by good climatic conditions and the people's strong desire for good tastes have resulted in the area's unique food culture. One of Nagoya's representative ingredients is red

miso. Red miso is made from soybeans and takes longer to age than miso made of rice or wheat. The traditionally abundant farm product and seafood in this area allowed the long aging of red miso. Red miso is an excellent ingredient that matches perfectly with various dishes such as udon noodles or pork cutlet. Various unique dishes, which cannot be seen in other areas, have been created using red miso. Taking advantage of its location between Tokyo and Osaka, Nagoya mixed the food cultures of Eastern and Western Japan and has adopted anything that seems delicious. This is why many surprising food combinations that have never been tried elsewhere are seen in this area. Dishes such as "hitsumabushi", "tenmusu", "ankake spaghetti" and "ogura toast" are considered to be representative inventions of Nagoya.

Excursions

Nagoya Station Area : The gateway to Nagoya with a group of skyscrapers, including Midland Square, JR Central Towers, and Mode Gakuen Spiral Towers.

Nagoya Castle : Government and other public offices are concentrated in this area around the Nagoya Castle, which is known for the golden dolphins on its rooftop. Also in the area is the Nagoya Noh Theater, where you can see performances of noh, Japan's traditional performing art.

Sakae : Nagoya's downtown shopping zone, bustling with people. The latest trends of young people's fashion and culture start here.

Osu : Osu is one of the most bustling shopping districts in Japan. With the ambience of the old neighborhood remaining, unique and original shops offering electric appliances, computers, second-hand clothes, and a variety of goods, line the streets.

Tokugawa/Shirakabe : The Tokugawa area has a quaint atmosphere with a castle town culture inherited by the Owari Tokugawa Family. In the Shirakabe area, there still remain nostalgic "modern" architecture, black-painted walls, and samurai residence-style gates.

Kakuozan : With Nittai-ji Temple, which was established to commemorate friendship between Thailand and Japan, the area offers lush greenery, classic architecture scattered here and there, and nostalgic shops reminiscent of Showa Era.

Atsuta : The area is a good old downtown developed around Atsuta Shrine. During the Edo Period, there used to be a post station called Miya-juku, one of the Tokaido Highway's 53 stations.

Arimatsu/Narumi : Narumi used to be a busy post station of the old Tokaido Highway in the Edo Period. Old streets and buildings reminiscent of Edo Period are beautifully preserved in Arimatsu.

Nagoya Port : This area has been establishing a reputation as a popular leisure spot. The Port of Nagoya Public Aquarium and other tourist spots are concentrated around the Garden Warf.
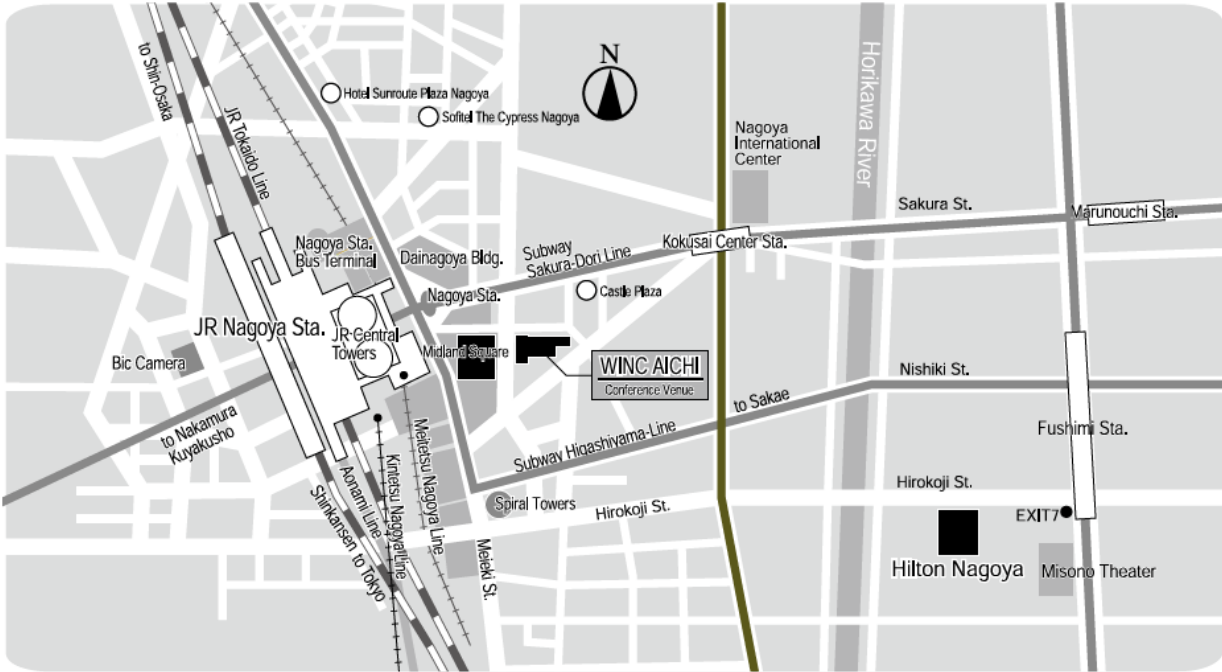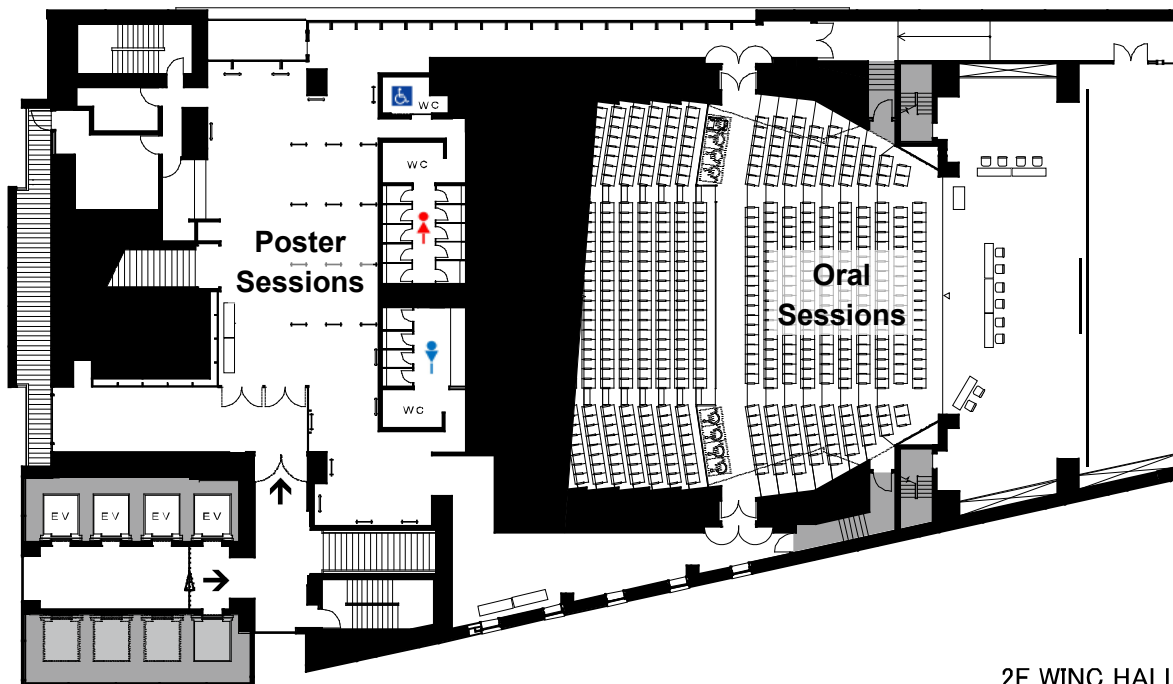
Venue and Room Location

WINC AICHI

Address: 4-4-1 Meieki, Nakamura-ku, Nagoya, Aichi, JAPAN.

Tel: +81-(0)52-571-6131

http://www.winc-aichi.jp/

Space and Floor Plan

Poster Sessions

Oral Sessions

2F WINC HALL

Social Activities

Welcome Reception

The welcome reception of PCS 2010 will be held in the Garden restaurant, Tokugawaen, on December 8 from 19:30 to 21:30. Please join and enjoy the Japanese style garden, restaurant with great food, and drinks. This would be an opportunity to find new colleagues and catch up with old friends.

Free shuttle buses will be provided between PCS 2010 venue and Tokugawaen.

Address: 1001, Tokugawa-cho, Higashi-ku, Nagoya 461-0023, Japan
Tel:+81-(0)52-932-7887

Banquet

On December 9 from 19:00 to 21:00, banquet will be held in the OOGI Ballroom of the Hilton Hotel, Nagoya. In a luxurious atmosphere, a course dinner will be severed while you enjoy watching one of the traditional performances of Kabuki. The Hilton Hotel is located at walking distance from the PCS 2010 venue.

Address:3-3, Sakae 1-chome, Naka-ku, Nagoya 460-0008, Japan
Tel: +81-(0)52-212-1111

Coffee breaks

There will be two coffee breaks per day, one in the morning and one in the afternoon.

Lunch

The symposium will not provide lunch for attendances. You can have lunch in the restaurants at the B1 floor of the venue. The symposium venue is located near the Nagoya Station and you can also find many restaurants within walking distance.

Schedule

Tuesday, December 7, 2010

Workshop on Picture Coding and Image Processing (PCSJ2010/IMPS2010)

10:00 - 10:05   **Opening**   Kiyoharu Aizawa (University of Tokyo)

10:05 - 10:45   **Keynote   FTV: Free-viewpoint Television**
      Masayuki Tanimoto (Nagoya University)   *Chair : Kenji Sugiyama (Seikei University)*

10:45 - 11:00   **Coffee Break**

11:00 - 12:30   **Poster 1 : Image/Video Coding and Transmission**

12:30 - 13:45   **Lunch**

13:45 - 15:15   **Poster 2 : Image/Video Processing**

15:15 - 15:30   **Coffee Break**

15:30 - 17:00   **Poster 3 : 3DTV/FTV, Computer Vision, Pattern Recognition, and Multimedia Applications**

17:00 - 18:00   **Welcome Party at WINC AICHI**

Wednesday, December 8, 2010

Picture Coding Symposium Day 1

8:30 - 8:45   **Opening Session**   Masayuki Tanimoto (Nagoya University)
                          Chair : Yoshiyuki Yashima (Chiba Institute of Technology)

8:45 - 9:30   **Keynote Speech 1 (K1) : Research and Activities on Ultra-realistic Communications**
      Kazumasa Enami (NICT)   *Chair : Takahiro Saito (Kanagawa University)*

9:30 - 9:45   **Coffee Break**

9:45 - 11:45   **Oral Session 1 (O1) : FTV**   *Chair : Marek Domański (Poznan Univ. of Technology)*

11:45 - 13:00   **Lunch**

13:00 - 15:30   **Special Session 1 (S1) : 3DTV/FTV**
                          Chair : Toshiaki Fujii (Tokyo Institute of Technology)

15:30 - 16:30   **Panel Discussion 1 (D1) : 3DTV/FTV**
                          Chair : Toshiaki Fujii (Tokyo Institute of Technology)

16:30 - 16:45   **Coffee Break**

16:45 - 18:15   **Poster Session 1 (P1)**   *Chair : Jiro Katto (Waseda University)*

19:30 – 21:30   **Welcome Reception at Tokugawa-en**

Thursday, December 9, 2010

Picture Coding Symposium Day 2

8:45 - 9:30   **Keynote Speech 2 (K2) : Decoding Visual Perception from Human Brain Activity**
       Yukiyasu Kamitani (ATR, Japan)   *Chair : Kiyoharu Aizawa (University of Tokyo)*

9:30 - 11:00   **Poster Session 2 (P2)**   *Chair : Kazunori Kotani (JAIST)*

11:00 - 11:15   **Coffee Break**

11:15 - 12:00   **Tutorial Session 1 (T1) : Evolutive Video Coding - From Generic Algorithm towards Content-Specific Algorithm –**   Seishi Takamura (NTT Corp., Japan)
       Chair : Kenji Sugiyama (Seikei University)

12:00 - 13:15   **Lunch**

13:15 - 15:15   **Oral Session 2 (O2): Depth Map Coding**
       Chair : Kiyoharu Aizawa (University of Tokyo)

15:15 - 15:30   **Coffee Break**

15:30 - 17:30   **Oral Session 3 (O3) : New Techniques for Video Coding**
       Chair : Yoshiyuki Yashima (Chiba Institute of Technology)

19:00 – 20:00   **Banquet at the OOGI Ballroom of the Hilton Hotel**

Friday, December 10, 2010

Picture Coding Symposium Day 3

8:45 - 9:30   **Keynote Speech 3 (K3) : Advances in Video Compression**
       Thomas Wiegand (Fraunhofer Institute for Telecommunications, HHI)
       Chair : Kotaro Asai (Mitsubishi Electric Corporation)

9:30 - 11:00   **Poster Session 3 (P3)**   *Chair : Akira Kubora (Chuo University)*

11:00 - 11:15   **Coffee Break**

11:15 - 12:00   **Tutorial Session 2 (T2) : Quality Assessment for Image Compression Purpose**
       Chaker Larabi (Univ. of Poitiers) *Chair : Takayuki Hamamoto (Tokyo Univ. of Science)*

12:00 - 13:15   **Lunch**

13:15 - 15:15   **Special Session 2 (S2) : Beyond H.264/MPEG-4 AVC**
       Chair : Seishi Takamura (NTT Corporation)

15:15 - 16:15   **Panel Discussion 2 (D2) : Beyond H.264/MPEG-4 AVC**
       Chair : Kotaro Asai (Mitsubishi Electric Corporation)

16:15 - 16:30   **Coffee Break**

16:30 - 18:00   **Poster Session 4 (P4)**   *Chair : Shinichi Sakaida (NHK)*