19 April, 2017 (Wednesday)

13:15–13:30 **Opening Remark**

13:30–15:30 **[IP-19PM-1] Special Session: Photonic Intelligence**

IP-19PM-1-1 **Invited**
13:30–14:00 **A Coherent Ising Machine Based on Networked Optical Parametric Oscillators for Optimization Problems** 1
Takahiro Inagaki[1], Yoshitaka Haribara[2,3], Koji Igarashi[4], Tomohiro Sonobe[3,5], Shuhei Tamate[3], Toshimori Honjo[1], Alireza Marandi[6], Peter L. McMahon[6], Takeshi Umeki[7], Koji Enbutsu[7], Osamu Tadanaga[7], Hirokazu Takenouchi[7], Kazuyuki Aihara[2], Ken-ichi Kawarabayashi[3,5], Kyo Inoue[4], Shoko Utsunomiya[3], and Hiroki Takesue[1]
[1]NTT Basic Research Laboratories, Japan, [2]The University of Tokyo, Japan, [3]National Institute of Informatics, Japan, [4]Osaka University, Japan, [5]JST, Japan, [6]Stanford University, USA, [7]NTT Device Technology Laboratories, Japan

IP-19PM-1-2 **Invited**
14:00–14:30 **Solving Ising Problems with All-to-All Network of Time-Multiplexed Optical Parametric Oscillators** 3
Ryan Hamerly[1], Peter McMahon[1,2], Alireza Marandi[2], Shoko Utsunomiya[1], and Yoshihisa Yamamoto[3]
[1]National Institute for Informatics, Japan, [2]Stanford University, USA, [3]JST, Japan

IP-19PM-1-3 **Invited**
14:30–15:00 **Performance Improvement of Reservoir Computing by Using Two Temporal Outputs in Mutually Coupled Optoelectronic System** 5
Kazutaka Kanno and Masatoshi Bunsen
Fukuoka University, Japan

IP-19PM-1-4 **Invited**
15:00–15:30 **Structure and Fundamental Processes of Photonic Intelligence** 7
Hirokazu Hori
University of Yamanashi, Japan

Break (15:30-15:45)

15:45–17:30 **[IP-19PM-2] Optical Signal Processing I**

IP-19PM-2-1
15:45–16:00 **Widely Applicable Coding Method for Optical Correlators Based on an Autoencoder** 9
Hidenori Suzuki, Kanami Ikeda, and Eriko Watanabe
University of Electro-Communications, Japan

IP-19PM-2-2
16:00–16:15 **Improvement of Response Time in Dual-Wavelength Spatial Light Modulators via Overdrive Method** 11
Hiroto Sakai, Yu Takiguchi, Naoya Matsumoto, Munenori Takumi, Hiroshi Tanaka, Hirokazu Asaine, Norihiro Fukuchi, Naohisa Mukozaka, and Haruyoshi Toyoda
Hamamatsu Photonics K.K., Japan

IP-19PM-2-3
16:15–16:30 **Reference- and Lens-Free Single-Pixel Holographic Camera** 13
Ryoichi Horisaki, Hiroaki Matsui, and Jun Tanida
Osaka University, Japan

IP-19PM-2-4
16:30–16:45 **Two-Parameter Analysis of the Signal's Envelope as a Theoretical Basis for a New Trend in Optical Phase Measurements** 15
Tatiana Yakovleva
Federal Research Center "Computer Science and Control" of Russian Academy of Sciences, Russia

IP-19PM-2-5
16:45 –17:00 **Optimization of Polynomial Order Based on Residuals of Interpolation in Higher-Order Transport of Intensity Phase Imaging** 17
Koshi Komuro and Takanori Nomura
Wakayama University, Japan

IP-19PM-2-6
17:00–17:15 **Point Spread Function Engineering for Snapshot Compressive Imaging** 19
Esteban Vera[1] and Pablo Meza[2]
[1]Ponticia Universidad Católica de Valparaíso, Chile [2]Universidad de la Frontera, Chile

IP-19PM-2-7
17:15–17:30 **An Aperture-Division Full-Stokes Vector Polarimetric Camera and Its Polarimetric Imaging Applications** 21
Liyong Ren[1], Wenfei Zhang[1,2,3], Jian Liang[1,2], Haijuan Ju[1,2], Zhaofeng Bai[1], Enshi Qu[1], and Zhaoxin Wu[3]
[1]Chinese Academy of Sciences, China, [2]University of Chinese Academy of Sciences, China, [3]Xi'an Jiaotong University, China

20 April, 2017 (Thursday)

9:00–10:30 **[IP-20AM-1] Optical Signal Processing II**

IP-20AM-1-1
9:00–9:15 **Single Pixel Imaging with 1-D Hadamard Transform and Frequency Multiplexing** 23
Kouichi Nitta, Kazuki Morimoto, Shinji Hayashi, and Osamu Matoba
Kobe University, Japan

IP-20AM-1-2
9:15–9:30 **Depth Extraction from Image Contrast Using Retroreflective Structure** 25
Sungwon Choi, Junkyu Yim, and Sung-Wook Min
Kyung Hee University, Republic of Korea

IP-20AM-1-3
9:30–9:45 **Single-Shot Fast Phase Retrieval in the Holographic Data Storage** 27
Xiao Lin[1], Tsutomu Shimura[2], Ryushi Fujimura[3], Yoshito Tanaka[2],Masao Endo[2], Jinpeng Liu[1], Jinyan Liu[1], Yong Huang[1], and Xiaodi Tan[1]
[1]Beijing Institute of Technology, China, [2]The University of Tokyo, Japan [3]Utsunomiya University, Utsunomiya, Japan

IP-20AM-1-4
9:45–10:00 **Elimination Method for the Zero-Order Term in Off-Axis Digital Holography Utilizing Spatial-Carrier Frequency Analysis** 29
Erkhembaatar Dashdavaa and Nam Kim
Chungbuk National University, , Republic of Korea

IP-20AM-1-5
10:00–10:15 **Inkjet-Printed 3D Structure Projecting Multiple Full-Color Images** 31
Ryuji Hirayama[1,2], Tomotaka Suzuki[2], Tomoyoshi Shimobaba[2], Atsushi Shiraki[2], Makoto Naruse[3], Hirotaka Nakayama[4], Takashi Kakue[1], and Tomoyoshi Ito[1]
[1]Chiba University, Japan, [2]JSPS, Japan, [3]National Institute of Information and Communications Technology, Japan, [4]National Astronomical Observatory of Japan, Japan

IP-20AM-1-6
10:15–10:30 **Design and Investigation of Computer-Generated Fourier Holograms of Colored 3D Objects** 33
Michael A. Golub and Michael Parchomovsky
Tel Aviv University, Israel

Break (10:30-11:00)

11:00–12:00 **[IP-20AM-2] Information Photonics Tutorial**

IP-20AM-2-1
11:00–12:00 **Marriage between Holography and Statistical Optics for Unconventional Imaging: Coherence Holography and Holographic Correloscopy (A Tutorial)** 35
Mitsuo Takeda
Utsunomiya University, Japan

Lunch Break (12:00-13:30)

13:30–15:00 **[IP-20PM-1] Imaging and Holography**

IP-20PM-1-1
13:30–13:45 **Image-Based Link between Frequency Comb Profilometer and Optical Interferometer** 37
Quang Duc Pham and Yoshio Hayasaki
Utsunomiya University, Japan

IP-20PM-1-2
13:45–14:00 **Exposure Fusion Based on Luminance and Contrast Evaluation** 39
Kuo Chen, Zhong Qu, Shufang Xia
Chongqing University of Posts and Telecommunications, China

IP-20PM-1-3
14:00–14:15 **Holographic Particle Sizing by Using Wigner-Ville Distribution of Flipped and Replicated Holograms** 41
Porntip Chuamchaitrakool[1], Joewono Widjaja[1], Hiroyuki Yoshimura[2]
[1]Suranaree University of Technology, Thailand, [2]Chiba University, Japan

IP-20PM-1-4
14:15–14:30 **Multi-Layered Aerial LED Display by Double-Stage Polarized Aerial Imaging by Retro-Reflection** 43
Nao Kurokawa, Kenta Onuki, Hirotsugu Yamamoto
Utsunomiya University, Japan

IP-20PM-1-5
14:30–14:45 **Highly Concentration Phenanthrenequinone Doped Poly (MMA-Co-BzMA) for Thick Polarization Holography** 45
Fenglan Fan, Ying Liu, Yifan Hong, Jinliang Zang, Tianbo Zhao, and Xiaodi Tan
Beijing Institute of Technology, China

IP-20PM-1-6
14:45–15:00 **Full-Color Polygon Based Computer Holography for Real Objects Captured by a Depth Camera** 47
Yu Zhao[1], Ki-Chul Kwon[1], Yan-ling Piao[1], Seok-Hee Jeon[2], and Nam Kim[1]
[1]Chungbuk University, Republic of Korea, [2]Incheon National University, Republic of Korea

Break (15:00-15:30)

15:30–18:00 **[IP-20PM-2] Special Session: Computational Complex-Amplitude Imaging**

IP-20PM-2-1 **Invited**
15:30–16:00 **Quantitative Single-Shot Phase Imaging for Shape Inspection** 49
Mikael Sjödahl[1], Davood Khodadad[2], Per Gren[1], Eynas Amer[1], and Erik Olsson[1]
Luleå University of Technology, Sweden, [2]Linnaeus University, Sweden

IP-20PM-2-2 **Invited**
16:00–16:30 **Three-Dimensional Pupil Holographic Imaging** 51
Yuan Luo
National Taiwan University, Taiwan

IP-20PM-2-3 **Invited**
16:30–17:00 **A Single Pixel Imaging for Digital Holography** 53
Thibault Leportier and Min-Chul Park
Korea Institute of Science and Technology, Republic of Korea

IP-20PM-2-4 **Invited**
17:00–17:30 **High-Speed Single-Pixel Digital Holography with Phase-Structured Illumination** 55
Lluís Martínez-León[1], Humberto Gonzalez[1], Pere Clemente[2], Fernando Soldevila[1], Eva Salvador-Balaguer[1], Ma. Araiza-Esquivel[1], Jesús Lancis[1], and Enrique Tajahuerce[1]
[1]Universitat Jaume I, Spain, [2]Universidad Autónoma de Zacatecas, México

IP-20PM-2-5 **Invited**
17:30–18:00 **Cyphertext-Only Attack to Double Random-Phase Encoding: Experimental Demonstrations** 57
Guowei Li, Wanqin Yang, Dayan Li, and Guohai Situ
Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China, University of the Chinese Academy of Sciences, China

21 April, 2017 (Friday)

9:00–10:30 **[IP-21AM-1] Special Session: Holography**

IP-21AM-1-1 **Invited**
9:00–9:30 **Recent Progress in Optical Scanning Holography** 59
Jung-Ping Liu
Feng Chia University, Taiwan

IP-21AM-1-2 **Invited**
9:30–10:00 **Applications of Geometric Metasurface in Holography** 61
Lingling Huang and Yongtian Wang
Beijing Institute of Technology, China

IP-21AM-1-3 **Invited**
10:00–10:30 **Holographic and Light Field Head Mounted Displays and Their Contents Synthesis** 63
Jae-Hyeung Park
Engineering, Inha University, Republic of Korea

Break (10:30-11:00)

11:00–11:30 **[IP-21AM-2] Holography**

IP-21AM-2-1
11:00–11:15 **3D Physically Based Rendering of Computer Generated Holograms by Orthographic Ray-Sampling** 65
Shunsuke Igarashi[1], Tomoya Nakamura[1,2], Kyoji Matsushima[3], and Masahiro Yamaguchi[1]
[1]Tokyo Institute of Technology, Japan, [2]PRESTO, JST, Japan, [3]Kansai University, Japan

IP-21AM-2-2
11:15–11:30 **Optical Fabrication of DNA Hydrogel Using Holographic Pattern** 67
Suguru Shimomura, Takahiro Nishimura, Yusuke Ogura, and Jun Tanida
Osaka University, Japan

Lunch Break (11:30-13:30)

13:30–15:00 **[IP-21PM-1] Information Photonics Poster Session**

IP-21PM-1-1
13:30–15:00 **Light-in-Flight Recording by Holography not Using Scattering Light** 69
Itsuki Takamoto, Daiki Yamanaka, Yusuke Tsuda, Yasuhiro Awatsuji, and Kenzo Nishio
Kyoto Institute of Technology, Japan

IP-21PM-1-2
13:30–15:00 **The Velocity Measurement of Moving Micro-particles in Pure Water and Salt-Water Solutions Using Digital Holographic Interferometer** 71
Prathan Buranasiri
King Mongkut's Institute of Technology, Thailand

IP-21PM-1-3
13:30–15:00 **Steganography by Use of a Clear Sphere as a Key for Decoding a Concealed Aerial Image Formed with AIRR** 73
Kengo Fujii[1], Shusei Ito[1], Satoshi Maekawa[2], and Hirotsugu Yamamoto[1]
[1]Utsunomiya University, [2]Parity Innovations, Japan

IP-21PM-1-4
13:30–15:00 **Fast Three-Dimensional Shape Measurement System Using a Generalized Phase Shifting Method with a Continuous Fringe-Scanning Scheme** 75
Yuki Kawai and Nobukazu Yoshikawa
Saitama University, Japan

IP-21PM-1-5
13:30–15:00 **Visualizing Gloss Area on Handwritten Strokes by Compound-Eye Polarization Images under Coaxial Illumination** 77
Yoshinori Akao
National Research Institute of Police Science, Japan

IP-21PM-1-6
13:30–15:00 **Floating Three-Dimensional Display with a Lenticular Sheet and a Dihedral Corner Reflector Array** 79
Yuma Tokubo, Daisuke Miyazaki, and Takaaki Mukai
Osaka City University, Japan

IP-21PM-1-7
13:30–15:00 **Holographic Fluorescence Mapping Using Space-Division Matching Method** 81
Hitoshi Ogawa, Ryosuke Abe, and Yoshio Hayasaki
Utsunomiya University, Japan

IP-21PM-1-8
13:30–15:00 **Rendering of Transparent Objects in Polygon-Based Computer Holography** 83
Hirohito Nishi and Kyoji Matsushima
Kansai University, Japan

IP-21PM-1-9
13:30–15:00 **Improvement of Cloaking Performance by Designing the Constitutive Parameter Distribution** 85
Tatsuo Tanaka[1,2], Osamu Matoba[1]
[1]Kobe University, Japan, [2]Asahi Kasei Corporation, Japan

IP-21PM-1-10
13:30–15:00 **Color Distortion Suppression in Color Digital Holography** 87
Keisuke Kasai and Nobukazu Yoshikawa
Saitama University, Japan

IP-21PM-1-11
13:30–15:00 **In-Line Interference Phase Imaging Using a Single-Pixel Camera** 89
Kazuki Ota and Yoshio Hayasaki
Utsunomiya University, Japan

IP-21PM-1-12
13:30–15:00 **Learning-Based Decomposition of Volumetric Scenes for Multi-Plane Displays with Focus Cues** 91
Seungjae Lee, Jaebum Cho, and Byoungho Lee
Seoul National University, Republic of Korea

IP-21PM-1-13
13:30–15:00 **Surface Relief Formation of Hologram in Soda-Lime Silicate Glass Transferred by Corona Discharge** 93
Daisuke Sakai, Kohei Nakabayashi, and Kenji Harada
Kitami Institute of Technology, Japan

IP-21PM-1-14
13:30–15:00 **Aerial Imaging Display System by Use of AIRR and CMA** 95
Ryosuke Kujime[1,2], Haruki Mizushina[2], Shiro Suyama[2], and Hirotsugu Yamamoto[1,3]
[1]Utsunomiya University, Japan, [2]Tokushima University, Japan, [3]JST, ACCEL, Japan

IP-21PM-1-15
13:30–15:00 **Extending the Floating Distance of an Aerial Heater by Use of WARM** 97
Tomoyuki Okamoto[1], Kazuki Kawai[1], Kenta Onuki[1], Sho Onose[1], Takaho Itoigawa,[1] and Hirotsugu Yamamoto[1,2]
Utsunomiya University, Japan, [2]JST, ACCEL, Japan

IP-21PM-1-16
13:30–15:00 **Forming Two Aerial Images at Two Viewpoints by Use of a Slit Array** 99
Tomofumi Kobori[1], Ryosuke Kujime[1], Masashi Takahashi[1], Tomoyuki Okamoto[1] Sho Onose[1], Kazuki Kawai[1], and Hirotsugu Yamamoto[1,2] ,[2]JST, ACCEL, Japan
Utsunomiya University, Japan,

IP-21PM-1-17
13:30–15:00 **Femtosecond Laser Microdissection of Biological Tissues Using Computer-Generated Hologram** 101
Satoshi Hasegawa and Yoshio Hayasaki
Utsunomiya University, Japan

Break (15:00-15:30)

15:30–16:30 **[IP-21PM-2] Imaging and Display**

IP-21PM-2-1
15:30–15:45 **About Resolution of Refocused Image and Generated 3D Image from Data Acquired by Light-Field Camera** 103
Toru Iwane
NIKON Corporation, Japan

IP-21PM-2-2
15:45–16:00 **Graphene Based LC Devices for Near Infrared Image Processing** 105
Vera Marinova[1,2], Shiuan Huei Lin[1], Stephan Petrov[1], Chia Ming Chang[1], Yi Hsin Lin[1], and Ken Yuh Hsu[1]
[1]National Chiao Tung University, University, Taiwan, [2]Institute of Optical Materials and Technologies, Bulgaria

IP-21PM-2-3
16:00–16:15 **Analysis of Three-Dimensional Screen Composed of Lens Array and Retroreflector Sheet andits Implementation with Projection-Type Integral Imaging** 107
Young Min Kim, Seunghwi Ryu, Hyeongkyu Do, and Sung-Wook Min
Kyung Hee University, Republic of Korea

IP-21PM-2-4
16:15–16:30 **Holographic Optical Access for Rendering Volumetric Bubble Graphics** 109
Kota Kumagai and Yoshio Hayasaki
Utsunomiya University, Japan

16:30–16:45 **Award & Closing Remark**