

4th International Workshop on Image Sensors and Imaging Systems (IWISS2018)の報告

報告日：2018年12月27日(木)

報告者：香川景一郎(静岡大学)

【日時】2018年11月28日(水)9:50~29日(木)16:00

【場所】東京工業大学 田町キャンパス(東京 芝浦)

【主催】日本光学会 情報フォトンクス研究グループ(IPG)+CMOSワーキンググループ

【共催】International Image Sensor Society (IISS), 映像情報メディア学会(ITE) 情報センシング研究委員会

【協賛】IEEE SSCS Japan Chapter, innovative Photonics Evolution Research Center (iPERC)

【実行委員会】実行委員長：香川景一郎(静岡大学), 副実行委員長：浜本隆行(東京理科大学), 山本裕紹(宇都宮大学), プログラム委員：川人祥二(静岡大学), 小室孝(埼玉大学), 長原一(大阪大学), 小野篤史(静岡大学), ソ ミンウン(サムスン電子), 鈴木裕之(東京工業大学), 寺西信一(静岡大学/兵庫県立大学), 安富啓太(静岡大学)

【参加者数】96人

内訳1：大学・研究機関47人, 企業49人

内訳2：日本76人, 韓国13人, 中国2人, 台湾2人, アメリカ2人, イタリア：1人

【参加費】一般15,000円, 学生8,000円(予稿集込み, オンライン事前払い)

【プログラム】次ページ以降に添付

【ポスター賞】

招待講演者およびIWISS2018実行委員とIWISS2018実行委員による投票に基づき, 映像情報メディア学会情報センシング研究委員会から以下の賞3件を授与した.

ITE Open Poster Session Best Poster Award 1st Place: Tomoya Nakamura (Tokyo Institute of Technology) *et al.*, “Lensless imaging by coded image sensors”

ITE Open Poster Session Best Poster Award 2nd Place: Atsutaka Miyamichi (Shizuoka University) *et al.*, “Multi-band plasmonic color filtering through nanostructured metal thin film for RGB-NIR image sensors”

ITE Open Poster Session Best Poster Award 2nd Place: Sanggwon Lee (Shizuoka University) *et al.*, “A 4-tap lock-in pixels with a high NIR sensitivity for long range time-of-flight range sensor”

【報告】本国際会議は, 2年に一回開催されるイメージセンサデバイスに特化した International Image Sensor Society 主催の国際会議 International Image Sensor Workshop を補完するものである. 応用分野との相互作用によりイメージセンサを特異的に進化させ, 応用分野にも革新を起こすことを狙っている. 招待講演者の多くは大学の研究者である一方で, 約半数が企業からの参加者であり, 効果的な産学連携の場を提供できたと考えている. 今回, 参加費・懇親会費を外注してオンライン決済としたことで参加費が

上昇したが運営が効率化され、参加者の減少は想定内に収まった。今後も国際的に認知される国際会議を目指す。

Program:

Nov. 28 (WED)

9:00 Registration opens

9:50-10:00 Opening remarks by Keiichiro Kagawa (Shizuoka Univ., Japan)

10:00-12:10 Time-resolved imaging (130-min) **Chair:** Keiichiro Kagawa (Shizuoka Univ., Japan),
Hajime Nagahara (Osaka Univ., Japan)

10:00-10:50 [Plenary] Time-of-flight single-photon avalanche diode imagers by Franco Zappa (Politecnico di Milano, Italy)

10:50-11:30 [Invited1] Light transport measurement using ToF camera by Yasuhiro Mukaigawa (Nara Institute of Science and Technology, Japan)

11:30-12:10 [Invited2] A high-speed, high-sensitivity, large aperture avalanche image intensifier panel by Yasunobu Arikawa, Ryosuke Mizutani, Yuki Abe, Shohei Sakata, Jo Nishibata, Akifumi Yogo, Mitsuo Nakai, Hiroyuki Shiraga, Hiroaki Nishimura, Shinsuke Fujioka, and Ryosuke Kodama (Osaka Univ., Japan)

12:10-13:30 Lunch (80-min)

13:30-14:50 Circuit and process technologies (80-min) **Chair:** Keiichiro Kagawa (Shizuoka Univ., Japan)

13:30-14:10 [Invited3] A back-illuminated global-shutter CMOS image sensor with pixel-parallel 14-bit subthreshold ADC by Shin Sakai, Masaki Sakakibara, Tsukasa Miura, Hirotsugu Takahashi, Tadayuki Taura, and Yusuke Oike (Sony Semiconductor Solutions Corporation, Japan)

14:10-14:50 [Invited4] RTS noise characterization and suppression for advanced CMOS image sensors
by Rihito Kuroda, Shinya Ichino, Takezo Mawaki, Tomoyuki Suwa, Akinobu Teramoto, and Shigetoshi Sugawa (Tohoku Univ., Japan)

14:50-15:00 Break (10-min)

15:00-16:20 Multi-spectral imaging(90-min) **Chair:** Takashi Komuro (Saitama Univ., Japan)

15:00-15:40 [Invited5] Snapshot multispectral imaging using a filter array by Kazuma Shinoda (Utsunomiya Univ., Japan)

15:40-16:20 [Invited6] Multiband imaging and optical spectroscopic sensing for digital agriculture
by Takaharu Kameoka, Atsushi Hashimoto (Mie Univ., Japan), Kazuki Kobayashi (Shinshu

Univ., Japan), Keiichiro Kagawa (Shizuoka Univ., Japan), Masayuki Hirafuji (Univ. of Tokyo, Japan), and Jun Tanida (Osaka Univ., Japan)

16:20-16:30 Break (10-min)

16:30-18:00 Poster session as ITE Open Session (90-min)

This session includes 22 regular papers. See the following URL for the program.

https://www.ite.or.jp/ken/program/index.php?mode=program&tgs_regid=087c5280195ec72d7d2841c8805a0eccc22f8ed737965ec60e99821155ad5293&tgid=ITE-IST&layout=&lang=eng

18:00-18:10 Break (10-min)

18:10-20:00 Reception (110-min)

18:10-20:00 Reception and poster award

Nov. 29 (THU)

9:30-11:30 Computational imaging and biomedical imaging (120-min)

Chair: Atsushi Ono (Shizuoka Univ., Japan)

9:30-10:10 [Invited7] Lensless fluorescence microscope by Kiyotaka Sasagawa, Ayaka Kimura,

Yasumi Ohta, Makito Haruta, Toshihiko Noda, Takashi Tokuda, and Jun Ohta (Nara Institute of Science and Technology, Japan)

10:10-10:50 [Invited8] Computational photography using programmable sensors by Hajime Nagahara (Osaka Univ., Japan)

10:50-11:30 [Invited9] Medical imaging with multi-tap CMOS image sensors by Keiichiro Kagawa,

Keita Yasutomi, and Shoji Kawahito (Shizuoka Univ., Japan)

11:30-13:00 Lunch (90-min)

13:00-15:50 Computational imaging and display (160-min)

Chair: Hiroyuki Suzuki (Tokyo Inst. of Tech., Japan)

13:00-13:40 [Invited10] Image processing for personalized reality by Kiyoshi Kiyokawa (Nara Institute of Science and Technology, Japan)

13:40-14:20 [Invited11] Pixel aperture and offset pixel aperture techniques for 3-dimensional imaging

by Jang-Kyoo Shin, Byoung-Soo Choi, Jimin Lee (Kyungpook National Univ., Korea), Seunghyuk Chang, Jong-Ho Park, and Sang-Jin Lee (KAIST, Korea)

14:20-14:30 Break (10-min)

14:30-15:10 [Invited12] Low power and low latency line streaming image processing for 3D user interface on smart devices by Sungpill Choi and Hoi-jun Yoo (KAIST, Korea)

15:10-15:50 [Invited13] Image sensing for human-computer interaction by Takashi Komuro

(Saitama Univ., Japan)

15:50-16:00 Closing remarks by Hirotsugu Yamamoto (Utsunomiya Univ.)

Wed, Nov 28 PM			
16:30 - 18:00			
(1)	16:30-18:00	<p>[Poster Presentation]</p> <p>Joint optimization for compressive video sensing and reconstruction under hardware constraints, IST2018-59</p>	<p>Michitaka Yoshida (Kyushu Univ.), Akihiko Torii, Masatoshi Okutomi (Tokyo Tech), Kenta Endo, Yukinobu Sugiyama(Hamamatsu Photonics K. K.), RIn-ichiro Taniguchi (Kyushu Univ.), Hajime Nagahara(Osaka Univ.)</p>
(2)	16:30-18:00	<p>[Poster Presentation]</p> <p>Multi-band plasmonic color filtering through nanostructured metal thin film for RGB-NIR image sensor, IST2018-60</p>	<p>Atsutaka Miyamichi, Atsushi Ono, Keiichiro Kagawa, Keita Yasutomi, Shoji Kawahito(Shizuoka Univ.)</p>
(3)	16:30-18:00	<p>[Poster Presentation]</p> <p>CMOS Image Sensor with Pseudorandom Pixel Placement For Jaggy Elimination, IST2018-61</p>	<p>Junichi Akia (Kanazawa Univ.)</p>
(4)	16:30-18:00	<p>[Poster Presentaion]</p> <p>Tissue measurement based on a multi-tap CMOS image sensor with binary structured light, IST2018-62</p>	<p>Yuki Nishioka, Keiichiro Kagawa, Keita Yasutomi, Shoji Kawahito (Shizuoka Univ.)</p>
(5)	16:30-18:00	<p>[Poster Presentation]</p> <p>[Poster Presentation] On a BSI Image Signal Accumulation Sensor of 100 Mfps, IST2018-63</p>	<p>Nguyen Ngo, Kazuhiro Morimoto, Kazuhiro Shimonomura, Takeharu Goji Etoh(Ritsumeikan Univ.)</p>
(6)	16:30-18:00	<p>[Poster Presentation]</p> <p>Measuring the Shape and Reflectance of Real Objects for Reproducing the Material Appearance, IST2018-64</p>	<p>Zar Zar Tun, Seiji Tsunozaki, Takashi Komuro (Saitama Univ.), Shoji Yamamoto(TMCIT), Norimichi Tsumura (Chiba Univ.)</p>

(7)	16:30-17:00	[Poster Presentation] [Poster Presentation] Evolution of ultra-high-speed image sensors-Light-in-Flight imaging to Ultra-fast X-ray imaging, IST2018-65	Kazuhiro Morimoto, Nguyen Ngo, Kazuhiro Shimonomura, Takeharu Etoh (Ritsumeikan Univ.)
(8)	16:30-18:00	[Poster Presentation] Visualization of time-of-flight signals with normalized and calibrated phasor plot, IST2018-66	Ryota Miyagi, Keiichiro Kagawa, Yuta Murakami (Shizuoka Univ.), Hajime Nagahara(Osaka Univ.), Keita Yasutomi, Shoji Kawahito (Shizuoka Univ.)
(9)	16:30-18:00	[Poster Presentation] A real-time stress monitoring system using a high sensitivity camera, IST2018-67	Leyi Tan, Masashi Hakamata, Chen Cao, Keiichiro Kagawa (Shizuoka univ), Norimichi Tsumura (Chiba univ), Shoji Kawahito(Shizuoka univ)
(10)	16:30-18:00	[Poster Presentation] A low noise global shutter CMOS image sensor with multiple sampling, IST2018-68	Hiroyuki Yamaguchi, Toshinori Otaka, Takayuki Hamamoto (TUS)
(11)	16:30-18:00	[Poster Presentation] Measuring the advertisement effect based on emotional responses analysis with crowdsourcing, IST2018-69	Kenta Masui, Genki Okada, Norimichi Tsumura (Chiba Univ.)
(12)	16:30-18:00	[Poster Presentation] Implantable CMOS Image Sensor Using Multilayer Filter Emission and Fiber Coupled Laser Excitation, IST2018-70	Erus Rustami, Yasumi Ohta, Kiyotaka Sasagawa, Makito Haruta (NAIST), Toshihiko Noda (TUT), Takashi Tokuda, Jun Ohta(NAIST)
(13)	16:30-18:00	[Poster Presentation] Multi-storied photodiode CMOS image sensor with wire grid polarizer to detect polarization information, IST2018-71	Yoshiaki Takemoto, Yusuke Yamamoto, Yoshiharu Ajiki, Yusaku Koyama, Hideki Kato, Toru Kondo, Haruhisa Saito, Yuichi Gomi, Seisuke Matsuda, Yoshitaka Tadaki(Olympus)
(14)	16:30-18:00	[Poster Presentation]	Keita Yamaguchi, Yusuke

		[Poster Presentation] 3D-Sensing Technology based on Lensless Light-Field Imaging with Fresnel Zone Aperture, IST2018-72	Nakamura, Kazuyuki Tajima, Toshiaki Ishii, Koji Yamasaki, Takeshi Shimano (Hitachi, Ltd.)
(15)	16:30-18:00	[Poster Presentation] A high-sensitivity CMOS image sensor with front-side inner-lens, IST2018-73	Godeun Seok, Yunkyung Kim (Dong-A Univ.)
(16)	16:30-18:00	[Poster Presentation] [Poster Presentation] Lensless imaging by coded image sensors, IST2018-74	Tomoya Nakamura (Tokyo Tech.), Keiichiro Kagawa (Shizuoka Univ.), Shiho Torashima, Masahiro Yamaguchi (Tokyo Tech.)
(17)	16:30-18:00	Improvement of Imaging system for hand-waving finger vein authentication, IST2018-75	Hiroyuki Suzuki, Jumpei Nagata, Kazuki Hirai(Tokyo Tech.), Keiichiro Kagawa (Shizuoka Univ.), Takashi Obi, Nagaaki Ohyama (Tokyo Tech.), Takashi Komuro (Saitama Univ.)
(18)	16:30-18:00	[Poster Presentation] A 4-tap Lock-in Pixels with a high NIR Sensitivity for Long Range Time-of-Flight Range Sensor, IST2018-76	Sanggwon Lee, Keita Yasutomi, Masato Morita, Shoji Kawahito (Shizuoka Univ.)
(19)	16:30-18:00	Development of a mobile multi-spectral compound-eye camera TOMBO, IST2018-77	Tetsuya Nakanishi (Osaka Univ.), Keiichiro Kagawa (Shizuoka Univ.), Yasuo Masaki(ASAHI E.L.), Jun Tanida (Osaka Univ.)
(20)	16:30-18:00	[Poster Presentation] Averaging Pixel Current Calibration Algorithm for Reducing Fixed Pattern Noise in the Bolometer-Type Uncooled Infrared Image Sensor, IST2018-78	Sang-Hwan Kim, Byoung-Soo Choi, Jimin Lee, Junwoo Lee, Jewon Lee (Kyungpook National Univ.), Jae-Hyoun Park, Kyoung-II Lee (KETI), Jang-Kyoo Shin (Kyungpook National Univ.)
(21)	16:30-18:00	[Poster Presentation] Effects of Aperture Width on the	Jimin Lee, Byoung-Soo Choi, Sang-Hwan Kim, Jewon Lee, Junwoo Lee (Kyungpook

		Performance of Monochrome CMOS Image Sensor Using Offset Pixel Aperture Technique for Depth Extraction, IST2018-79	National Univ.), Seunghyuk Chang, JongHo Park, Sang-Jin Lee (CISS), Jang-Kyoo Shin(Kyungpook National Univ.)
(22)	16:30-18:00	[Poster Presentation] [Poster Presentation] A Current-Mode Differential Sensing CMOS Imager for Optical Linear Encoder, IST2018-80	You-Shin Chen, Tzu-Hsiang Hsu (NTHU), Chien-Wen Chen (ITRI), Chih-Cheng Hsieh(NTHU)