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RESEARCH INTERESTS

Image segmentation
Video segmentation
Deep learning

EDUCATION

Ph.D. candidate, Electrical Engineering
Korea University, Seoul Korea
Advisor: Professor Chang-Su Kim

Mar. 2011 – Feb. 2018
(Expected)

B.S., Electrical Engineering
Korea University, Seoul Korea

Mar. 2007 – Feb. 2011

PROFESSIONAL EXPERIENCE

Research Assistant

Korea University, Seoul Korea

Feb. 2011 – Present

- Development of electric pen coordinate system and detection algorithm
 - Feb. 2011 – Aug. 2011
 - Funded by Samsung Electronics
 - Developing patterned coordinate system and camera based detection algorithm
- Development of dehazing algorithm for surveillance system
 - Oct. 2011 – Dec. 2011
 - Funded by SK telecom
 - Developing real-time dehazing algorithm for surveillance camera
- Development of acoustic and image analysis technologies for intelligent context recognition
 - Jan. 2012 – Dec. 2013
 - Funded by Samsung Electronics
 - Developing logo/channel/genre detection and recognition algorithms
- Development of fast video de-duplication algorithm
 - Mar. 2014 – Dec. 2014
 - Funded by Samsung Electronics
 - Developing fast video de-duplication algorithm for extensive video dataset
- Development of context-based image simplification algorithm for semantic compression
 - Feb. 2015 – Dec. 2015
 - Funded by Samsung Electronics
 - Developing image simplification algorithm based on scene context for semantic compression
- Development of RGB-D dynamic segmentation algorithm
 - Mar. 2015 – Dec. 2015
 - Funded by SK telecom
 - Developing segmentation and mesh construction algorithm for RGB-D videos.

PAPERS SUBMITTED / IN PREPARATION

[1]

JOURNAL PUBLICATIONS

- [1] Il-Lyong Jung, Nikolay Akatyev, **Won-Dong Jang**, Leonardo Juniti Nomoto, and Chang-Su Kim, "Touchless user interface based on marker detection and tracking for real-time mobile applications," *International Journal of Innovative Computing, Information and Control*, vol. 9, no. 2, pp. 851-864, Feb. 2013.
- [2] Jin-Hwan Kim, **Won-Dong Jang**, Jae-Young Sim, and Chang-Su Kim, "Optimized contrast enhancement for real-time image and video dehazing," *Journal of Visual Communication and Image Representation*, vol. 24, no. 3, pp. 410-425, Apr. 2013.
- [3] **Won-Dong Jang**, Tae-Young Chung, Jae-Young Sim, and Chang-Su Kim, "FDQM: Fast quality metric for depth maps without view synthesis," to appear in *IEEE Trans. Circuits Syst. Video Technol.*, 2015.

CONFERENCE PUBLICATIONS

- [1] Jin-Hwan Kim, **Won-Dong Jang**, Yongsup Park, Dong-Hahk Lee, Jae-Young Sim, and Chang-Su Kim, "Temporally coherent real-time video dehazing," in *ICIP*, Orlando, FL, Sep. 2012.
- [2] **Won-Dong Jang** and Chang-Su Kim, "SEQM: Edge quality assessment based on structural pixel matching," in *VCIP*, San Diego, CA, Nov. 2012.
- [3] Tae-Young Chung, **Won-Dong Jang**, and Chang-Su Kim, "Efficient depth video coding based on view synthesis distortion estimation," in *VCIP*, San Diego, CA, Nov. 2012.
- [4] Chul Lee, **Won-Dong Jang**, Tae-Young Chung, and Chang-Su Kim, "Complex feature-based logo recognition," in *ITC-CSCC*, Yeosu, Korea, Jun. 2013.
- [5] **Won-Dong Jang**, Jae-Young Sim, and Chang-Su Kim, "GEQM: A quality metric for gray-level edge maps based on structural matching," in *ICASSP*, Florence, Italy, May 2014.
- [6] **Won-Dong Jang**, Chulwoo Lee, Jae-Young Sim, and Chang-Su Kim, "Automatic video genre classification using multiple SVM votes," in *ICPR*, Stockholm, Sweden, Aug. 2014.
- [7] Chulwoo Lee, **Won-Dong Jang**, Jae-Young Sim, Chang-Su Kim, "Multiple random walkers and their application to image cosegmentation," in *CVPR*, Boston, MA, Jun. 2015.
- [8] Kyung-Rae Kim, **Won-Dong Jang**, and Chang-Su Kim, "Frame-level matching of near duplicate videos based on ternary frame descriptor and iterative refinement," in *ICIP*, Quebec, Canada, Sep. 2015.
- [9] Jun-Tae Lee, Kyung-Rae Kim, **Won-Dong Jang**, and Chang-Su Kim, "Near-duplicate video clustering using multiple complementary video signatures," in *APSIPA ASC 2015*, Hong Kong, China, Dec. 2015.
- [10] Se-Ho Lee, **Won-Dong Jang**, and Chang-Su Kim, "RGB-D image segmentation based on random walk with restart," in *IWAIT*, Busan, Korea, Jan. 2016.
- [11] Jun-Tae Lee, Kyung-Rae Kim, **Won-Dong Jang**, and Chang-Su Kim, "Near-duplicate video copy detection with multi-modal video signature matching," in *IWAIT*, Busan, Korea, Jan. 2016.
- [12] **Won-Dong Jang**, Chulwoo Lee, Chang-Su Kim, "Primary object segmentation in videos via alternate convex optimization of foreground and background distributions," in *CVPR*, Las Vegas, NV, Jun. 2016.
- [13] Yeong Jun Koh, **Won-Dong Jang**, Chang-Su Kim, "POD: Discovering primary objects in videos based on evolutionary refinement of object recurrence, background, and primary object models," in *CVPR*, Las Vegas, NV, Jun. 2016.
- [14] Se-Ho Lee, **Won-Dong Jang**, Byung Kwan Park, and Chang-Su Kim, "RGB-D image segmentation based on multiple random walkers," in *ICIP*, Phoenix, AZ, Sep. 2016.
- [15] **Won-Dong Jang** and Chang-Su Kim, "Streaming video segmentation via short-term hierarchical segmentation and frame-by-frame Markov random field optimization," in *ECCV*, Amsterdam, Netherlands, Oct. 2016.
- [16] **Won-Dong Jang** and Chang-Su Kim, "Semi-supervised video object segmentation using multiple random walkers," *BMVC*, York, UK, Sep. 2016.
- [17] **Won-Dong Jang** and Chang-Su Kim, "Online video object segmentation via convolutional trident network," *CVPR*, Honolulu, HI, Jul. 2017.
- [18] Se-Ho Lee, **Won-Dong Jang**, and Chang-Su Kim, "Contour-constrained superpixels for image and video processing," *CVPR*, Honolulu, HI, Jul. 2017.
- [19] Juhyeok Mun, **Won-Dong Jang**, Deuk Jae Sung, and Chang-Su Kim, "Comparison of objective functions in CNN-based prostate magnetic resonance image segmentation," *ICIP*, Beijing, China, Sep. 2017.
- [20] Kyungsun Lim, **Won-Dong Jang**, and Chang-Su Kim, "Background Subtraction Using Encoder-Decoder Structured Convolutional Neural Network," *AVSS*, Lecce, Italy, Aug. 2017.
- [21] Se-Ho Lee, **Won-Dong Jang**, and Chang-Su Kim, "Temporal superpixels based on proximity-weighted patch matching," *ICCV*, Venice, Italy, Oct. 2017.

PATENTS

- [1] In-Kuk Yoon, Chang-Su Kim, Chulwoo Lee, **Won-Dong Jang**, Sung-Min Seo, Jung-Suk Lee, Jung-Suk Choi, and Yeong Jun Koh, "Display apparatus including a pattern and method of generating a pattern in a display apparatus," Appl. No. 12186591.9, Sep. 2012.

HONOR AND AWARDS

- [1] Runner-up Prize, 1st Competitive Exhibition of Information and Communication Paper, Research Institute for Information and Communication Technology, Korea University, Dec. 2010
- [2] Brain Korea (BK) 21 Graduate Student Fellowship, National Research Foundation of Korea (2011-2015)

DOMESTIC JOURNAL / CONFERENCE

- [1] **장원동**, 정일룡, 김창수, "패턴 분석 기반의 비접촉 사용자 인터페이스 기법," 한국방송공학회 추계학술대회, 2010년 11월.
- [2] 정일룡, **장원동**, 니콜라이 아카티예프, 김창수, "실시간 비접촉 모바일 제어기법," 전기학회논문지, vol. 60, no. 2, 2011년 2월.
- [3] **장원동**, 이철우, 고영준, 김창수, "전자 펜 기반 디스플레이 좌표인식 알고리즘," 제 24회 신호처리합동학술대회, 2011년 10월.
- [4] **장원동**, 이철우, 김창수, "영상 정보 기반의 채널 로고 인식 기법," 한국방송공학회 추계학술대회, 2013년 11월.
- [5] 김경래, **장원동**, 김창수, "모바일 기반 페이스로그 시스템," 한국방송공학회 하계학술대회, 2014년 6월.
- [6] 김경래, 이준태, **장원동**, 김창수, "이진 프레임 기술자를 이용한 유사중복 동영상 프레임 단위 정합," 방송공학회논문지, 2015년 7월.
- [7] 김영배, **장원동**, 김창수, "키넥트를 이용한 색상 및 깊이 기반 영상 분할 기법," 한국방송공학회 추계학술대회, 2015년 11월.

DOMESTIC PATENTS

- [1] 윤인국, 김창수, 이철우, **장원동**, 서성민, 이정석, 최정석, 고영준, "패턴을 구비한 디스플레이 장치 및 디스플레이 장치에서 패턴 생성 방법," Appl. No. 10-2011-0099423, Sep. 2011.
- [2] 윤인국, 김창수, 이철우, **장원동**, 김보라, 박세미, 이정석, 고영준, "디스플레이 패턴 인식을 이용한 입력 위치 검출 장치 및 방법," Appl. No. 10-2011-0102734, Oct. 2011.
- [3] 김창수, 김진환, **장원동**, 이동학, 박용섭, "동영상에 포함된 안개 제거를 위한 영상 처리 장치 및 그 방법," Appl. No. 10-2012-0051330, May 2012.
- [4] 김창수, 김진환, **장원동**, 이동학, 박용섭, "정지영상에 포함된 안개 제거를 위한 영상 처리 장치 및 그 방법," Appl. No. 10-2012-0046710, May 2012.

COMPUTER SKILLS

Languages

- C/C++, MATLAB, Python