



IW-FCV2018

24th International Workshop on Frontiers of Computer Vision

Program Booklet

Hakodate, Hokkaido, Japan
February 21-23, 2018.

Message from the General and Program Chairs

It is our great pleasure to open IW-FCV2018, International Workshop on Frontiers of Computer Vision, in Hakodate from February 21st to 23rd, 2018.

IW-FCV started as FCV, Japan-Korea Joint Workshop on Computer Vision, held in Daejeon, Korea in 1995. The workshop alternately held in Korea and in Japan, annually. Last year, we changed the name FCV to IW-FCV because we noticed that the papers had been in high quality during recent years, not just enhancing academic regional friendship among Korean and Japanese researchers anymore, and opportunities for international cooperation have markedly increased. This is the 2nd International workshop in a precise sense, but don't forget it is the 24th workshop continued from 1995.

The venue for IW-FCV 2018 is Future University Hakodate, which opened in 2000. The building of the university was designed with the concept of "Open space, Open mind," so it has transformative design. Furthermore, Hakodate has a meaningful cultural context, which is one of the first cities in Japan influenced by foreign culture, has a beautiful night view, and has fresh seafood. That makes Hakodate visited by many tourists.

Last but certainly not least, we wish to thank all the members of the IW-FCV committee for the immense amount of hard works they have done to ensure the success of IW-FCV2018. Like we ended IW-FCV2017 on a high note in Seoul, we hope that all participants will enjoy the workshop and visiting Hakodate. Welcome to IW-FCV2018!

General Chairs

Takeshi Nagasaki (Future University Hakodate, Japan)

Weon-Geun Oh (ETRI, Korea)

Program Chairs

Kengo Terasawa (Future University Hakodate, Japan)

Jaeho Lee (ETRI, Korea)

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General Chairs

Takeshi Nagasaki (Future University Hakodate, Japan)

Weon-Geun Oh (ETRI, Korea)

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Toshio Kawashima (Future University Hakodate, Japan)

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Shoji Suzuki (Future University Hakodate, Japan)

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Yoshimitsu Aoki (Keio University, Japan)

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Makoto Niwakawa (Meidensha, Japan)

Jun-ichiro Hayashi (Kagawa University, Japan)

Jongsoo Choi (Chung-Ang University, Korea)

Wongun Oh (ETRI, Korea)

Kyunghyun Yoon (Chung-Ang University, Korea)

Chilwoo Lee (Chonnam National University, Korea)

Inso Kweon (KAIST, Korea)

Kiryong Kwon (Pukyong National University, Korea)

Kanghyun Jo (University of Ulsan, Korea)

Jong-Il Park (Hanyang University, Korea)

Yongduek Seo (Sogang University, Korea)

Program

Wednesday, February 21

| | |
|---------------|--|
| 9:00 – 10:00 | Registration |
| 10:00 – 10:15 | Opening |
| 10:15 – 12:00 | Oral Session 1 |
| 12:00 – 13:30 | Lunch |
| 13:30 – 15:15 | Oral Session 2 |
| 15:15 – 16:45 | Poster & Demo Session 1 |
| 16:45 – 17:45 | Invited Talk 1 |
| 18:00 | Transfer bus departs toward banquet venue (Wait at the main entrance of FUN.) |
| 19:00 – 21:00 | Banquet (Four points by Sheraton Hakodate) |

Thursday, February 22

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|---------------|-------------------------|
| 9:45 – 11:00 | Oral Session 3 |
| 11:15 – 12:15 | Oral Session 4 |
| 12:15 – 13:30 | Lunch |
| 13:30 – 15:00 | Oral Session 5 |
| 15:00 – 16:30 | Poster & Demo Session 2 |
| 16:30 – 17:30 | Invited Talk 2 |
| 17:30 – 17:45 | Closing |

Friday, February 23

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| 9:45 – 17:45 | Technical Workshop |
| 17:45 | Finish Workshop |

Detailed Presentation Schedule

Wednesday, February 21

Oral Session 1 (10:15-12:00)

Chairs: Jong-Il Park (Hanyang University) and Yoshinori Kuno (Saitama University)

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| O1-1 | Zero-shot learning using dictionary definitions Hascoet Tristan, Ariki Yasuo and Tetsuya Takiguchi |
| O1-2 | Weighted Generalized Hough Transform by Using Partial Least Squares Regression Analysis Junpei Inukai, Kunihito Kato, David Harwood and Larry S. Davis |
| O1-3 | Disparity Computation of Arbitrary Plane Patch Using Normal Vector and Color Gradient Youlkyeong Lee and Kang-Hyun Jo |
| O1-4 | Multi-label Image Annotation via CNN with Graph Laplacian Regularization based on Word2Vec Yu Zhao, Junichi Miyao and Takio Kurita |
| O1-5 | Deep Convolutional 3D Object Classification from a Single Depth Image and Its Normal Map Yuji Oyamada, Tomotaka Ohnishi, Kazu Mishiba and Katsuya Kondo |
| O1-6 | Measuring Categorical Similarity with GAN Luke Lee and Wonjun Hwang |
| O1-7 | Face Recognition with Deep Residual Faster R-CNN Assylbek Razakhbergenov and Tomoko Ozeki |

Lunch (12:00-13:30)

Oral Session 2 (13:30-15:15)

Chairs: Ki-Ryong Kwon (Pukyong National University) and Toru Tamaki (Hiroshima University)

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| O2-1 | Undetected Human-Joints Estimation Using Multilayer Perceptron Masaki Nakashima, Toshiki Kikuchi, Yuko Ozasa and Hideo Saito |
| O2-2 | A Development of Augmented Reality System at Oka Castle Ruins in Takeda City, Oita Prefecture Hidehiro Ohki, Takashi Shibuya, Takeru Shinozaki, Keiji Gyohten and Toshiya Takami |
| O2-3 | Face Identification Based on Randomly Sampled Minute Feature Points Kazuki Takasaka and Kazuhiro Fukui |
| O2-4 | Fashion Style Transfer: Stylizing Person in Clothes Toshiki Kikuchi and Yuko Ozasa |
| O2-5 | Suitable Image Pairs for Feature-based Image Stitching You-Jin Ha, Si-Hyeong Park and Hyun-Deok Kang |
| O2-6 | Scene Classification based on Histogram of Detected Objects Siyi Shuai, Junichi Miyao and Takio Kurita |
| O2-7 | Grasping Pattern Estimation Based on Co-occurrence of Object and Hand Shape Takuya Kawakami, Tadashi Matsuo, Yoko Ogawa and Nobutaka Shimada |

Poster & Demo Session 1 (15:15-16:45)

Chairs: Hyun-Deok Kang (UNIST) and Kunihiro Kato (Gifu University)

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| P1-1 | Semantic segmentation of trajectories with agent models Daisuke Ogawa, Toru Tamaki, Bisser Raytchev and Kazufumi Kaneda |
| P1-2 | Apparel Area Detection and Classification System Jong Gook Ko, Da-Un Jung and Seungjae Lee |
| P1-3 | ROI Segmentation on Chest X-Rays with Fully Convolutional Network Dong Yul Oh and Il Dong Yun |
| P1-4 | A CNN-based Algorithm for pixel-wise semantic segmentation and Depth estimation Seon-Kuk Kim and Chil-Woo Lee |
| P1-5 | Defect Isolation with Hypothesis Generation and Verification Framework Minsu Kim, Moonsoo Ra, Seunghyun Kim and Whoi-Yul Kim |
| P1-6 | The Development of Skeleton Based Human Action Recognition Application Sang-Baek Lee and Jae-Ho Lee |
| P1-7 | Automatic Detection of Octopus with Inter-frame Difference Method from the Camera Image Attached to the Fishing Gear Hayato Ishikawa and Takeshi Nagasaki |
| P1-8 | Construction of Object Recognition Method in All Directions of Air Kohki Fukui and Jun'ichi Yamaguchi |

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| P1-9 | Collaborative Augmented Reality Based on Deformation of Real Object Jungsik Park and Jong-Il Park |
| P1-10 | Method of Estimating Fish Type in Set Net from Acoustic Data Satoshi Morohara and Takeshi Nagasaki |
| P1-11 | Removal of Unimportant Pixels for Classification with Deep Convolutional Neural Network Sayo Sushida, Junichi Miyao and Takio Kurita |

Chairs: Jae-Ho Lee (ETRI) and Rin-ichiro Taniguchi (Kyushu University)

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|------|---|
| D1-1 | Vanishing-Guided Lane and Road Marking Detection via Multi-Task Network Seokju Lee, Junsik Kim, Jae Shin Yoon, Seunghak Shin and In So Kweon |
| D1-2 | Thermal Image Enhancement using Convolutional Neural Network Yukyung Choi, Namil Kim, Soonmin Hwang, Jongchan Park and In So Kweon |
| D1-3 | Human body and facial parts segmentation using Encoder-Multiple Decoders CNN Hiroaki Aizawa and Kunihiro Kato |

Invited Talk 1 (16:45-17:45)

Chair: Jong-Il Park (Hanyang University)

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| | Generating Content-aware Perspective Videos from 360° Videos for Comfortable 360° Video Watching Kuk-Jin Yoon (Department of Mechanical Engineering, KAIST) |
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Banquet (19:00-21:00)

Location: Four Points by Sheraton Hakodate (14-10 Wakamatsu-cho Hakodate)

Free-bus will bring you to the banquet venue. The bus will depart 18:00 from FUN. Please wait at the main entrance of FUN.

Thursday, February 22

Oral Session 3 (9:45-11:00)

Chairs: Chilwoo Lee (Chonnam National University) and Atsushi Shimada (Kyushu University)

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| O3-1 | A Method of Generation of Normal Model and Discrimination of Defects by Adversarial AutoEncoder under Small Number of Defective Samples Shunsuke Nakatsuka, Hiroaki Aizawa and Kunihiro Kato |
| O3-2 | A Study on CGH Generation in GRID Computing Environment Changseob Kim, Jong-Il Park and Hanhoon Park |
| O3-3 | Hyperspectral Imaging for Measuring Vegetation Indices Makoto Ohsaki, Hajime Nagahara and Rin-ichiro Taniguchi |
| O3-4 | Person Re-identification by Deep Part Learning Hilal Özdemir, Yuko Ozasa, Hideo Saito and Lale Akarun |
| O3-5 | A Preliminary Study on Optimizing Person Re-identification using the Stable Marriage Algorithm Nik Mohd Zarif Hashim, Yasutomo Kawanishi, Daisuke Deguchi, Ichiro Ide and Hiroshi Murase |

Oral Session 4 (11:15-12:15)

Chairs: Kang-Hyun Jo (University of Ulsan) and Yasutomo Kawanishi (Nagoya University)

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| O4-1 | How does CNN grasp transparent object features? Roland Sireyjol, Atsushi Shimada, Tsubasa Minematsu, Hajime Nagahara and Rin-ichiro Taniguchi |
| O4-2 | Human Fall Recognition using the Spatiotemporal 3D CNN Sowmya Kasturi, Alexander Filonenko and Kang-Hyun Jo |
| O4-3 | Classification of Potsherds into Each Earthenware Using 3D Object Retrieval Kazumasa Oniki, Yuko Ozasa, Hideo Saito and Ryo Hachiuma |
| O4-4 | Lesion image synthesis using DCGANs for metastatic liver cancer detection Takaaki Konishi, Keisuke Doman, Shigeru Nawano and Yoshito Mekada |

Lunch (12:15-13:30)

Oral Session 5 (13:30-15:00)

Chairs: Kyunghyun Yoon (Chung-Ang University) and Keisuke Doman (Chukyo University)

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| O5-1 | Towards Taking Pulses Over YouTube to Determine Interest in Video Content Antony Lam, Kouyou Otsu, Keya Das and Yoshinori Kuno |
| O5-2 | Fault Detection for Tool Wear in Machining Processes using Neural Network Kyeong-Min Lee, Caleb Vununu, Suk-Hwan Lee, Oh-Heun Kwon and Ki-Ryong Kwon |
| O5-3 | Action Recognition Using RGB-D Video by Pre-trained CNN Itsuki Baba and Tomoko Ozeki |
| O5-4 | Visualization of spatial distribution of tomato yields based on action recognition Yoshiki Hashimoto, Daisaku Arita, Atsushi Shimada, Hideaki Uchiyama and Rin-ichiro Taniguchi |
| O5-5 | Fast Temporal Anti-jitter Correction Algorithm for Real-time Video Stitching Si-Hyeong Park, You-Jin Ha and Hyun-Deok Kang |
| O5-6 | Guideline for Certification of Image Attribute Structuring Technology for Vehicle Accident Prevention Weon-Geun Oh, Seung-Jae Lee and Hiromi T. Tanaka |

Poster & Demo Session 2 (15:00-16:30)

Chairs: Hyun-Deok Kang (UNIST) and Kunihiro Kato (Gifu University)

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| P2-1 | Age Estimation from Dual-Task Behavior for Comprehensive Growth Assessment of Children Chengju Zhou, Ikuhisa Mitsugami, Kota Aoki, Fumio Okura and Yasushi Yagi |
| P2-2 | e-Reader Supporting Restarting from Interrupted Reading Kenshiro Saito, Toshio Kawashima and Jumpei Kobayashi |
| P2-3 | A Machine Fault Assessment System using a Sound-to-Image Conversion Feature Representation Caleb Vununu, Kyung-Min Lee, Ha-Joo Song, Eung-Joo Lee, Kwang-Seok Moon, Suk-Hwan Lee and Ki-Ryong Kwon |
| P2-4 | Principal Component Analysis for Acceleration of Color Guided Image Filtering Yoshiki Murooka, Yoshihiro Maeda, Masahiro Nakamura, Tomohiro Sasaki and Norishige Fukushima |
| P2-5 | Baseball detection method robust to occlusion in hitting area based on high speed camera Joongsik Kim and Whoi-Yul Kim |
| P2-6 | Animal Detection in Huge Air-view Images using CNN-based Sliding Window Young-Chul Yoon and Kuk-Jin Yoon |
| P2-7 | Estimation of Object Functions Using Visual Attention Ryunosuke Azuma, Tetsuya Takiguchi and Yasuo Ariki |

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| P2-8 | Video Stippling based on Coherent Feature Line Dongwann Kang and Kyunghyun Yoon |
| P2-9 | Stability of Recursive Gaussian Filtering for Piecewise Linear Bilateral Filtering Koichiro Watanabe, Yoshihiro Maeda and Norishige Fukushima |
| P2-10 | Satellite Image Semantic Segmentation Using Fully Convolutional Network Atsushi Yoshihara, Tristan Hascoet, Tetsuya Takiguchi and Yasuo Ariki |

Chairs: Jae-Ho Lee (ETRI) and Rin-ichiro Taniguchi (Kyushu University)

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| D2-1 | A Novel Automatic Stent Detection Method in Intravascular OCT Images Based on Local Maximum of Standard Deviation Xinbo Ren, Qian Chen, Huaiyuan Wu, Kubo Takashi and Akasaka Takashi |
| D2-2 | Web-based Lung Nodule Detection System for Low-dose CT Images Chang-Mo Nam and Kyong Joon Lee |
| D2-3 | Real-time Demonstration of Collaborative Localization of a Swarm of Connected Vehicles Francois Rameau, Oleksandr Bailo, Jinsun Park, Kyungdon Joo, Jaesung Choe and In So Kweon |
| D2-4 | Fast One Shot Detection of Various Sized Objects Sanghyun Woo, Soonmin Hwang and In So Kweon |

Invited Talk 2 (16:30-17:30)

Chair: Hiroyasu Koshimizu (Chukyo University)

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| | Mobility AI and Marine AI: AI applications to local areas Hitoshi Matsubara (Future University Hakodate) |
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Invited Talk 1

Generating Content-aware Perspective Videos from 360° Videos for Comfortable 360° Video Watching

Kuk-Jin Yoon

Department of Mechanical Engineering, KAIST

Abstract: To watch 360° videos on normal two-dimensional (2D) displays, we not only need to select the specific region we want to watch (known as the viewpoint selection step) but also need to project the selected part of the 360° image onto the 2D display plane. In this work, we propose a fully automated online framework for generating content-aware comfortable perspective videos from 360° videos. During the viewpoint selection step, we estimate the spatio-temporal visual saliency based on the appearance and motion cues and choose an initial viewpoint to maximize the saliency of a perspective video and capture semantically meaningful content. The viewpoint is then refined by considering a smooth path of video viewpoints in spherical coordinates. Once the viewpoint is determined, the perspective image is generated by our content-aware projection method considering the salient content of the +video (e.g., linear structures and objects) obtained during the viewpoint selection process. To generate a comfortable perspective video, we enforced temporal consistency to both viewpoint selection and content-aware projection methods. Our method does not require any user interaction and is much faster than previous content-preserving methods. Quantitative and qualitative experiments on various 360° videos show the superiority of our perspective video generation framework.



Bio: Kuk-Jin Yoon is an associate professor in the Department of Mechanical Engineering at Korea Advanced Institute of Science and Technology (KAIST). He received the B.S., M.S., and Ph.D. degrees in Electrical Engineering and Computer Science from Korea Advanced Institute of Science and Technology (KAIST) in 1998, 2000, 2006, respectively. He was a post-doctoral fellow in the PERCEPTION team in INRIA-Grenoble, France, for two years from 2006 to 2008, and an assistant/associate professor in the School of Electrical Engineering and Computer Science at Gwangju Institute of Science and Technology (GIST), Korea, from 2008 to 2018. In addition, he was a technical adviser in the Visual Display Division at Samsung Electronics and in the Mobility Team

at Naver Labs in 2017, and currently is a steering committee member of Korea Strategy Project on VR/AR and Korea Culture Technology Institute. His research interests include stereo vision, visual object tracking, SLAM, structure-from-motion, 3D reconstruction, vision-based ADAS, etc.

Invited Talk 2

Mobility AI and Marine AI: AI applications to local areas

Hitoshi Matsubara

Future University Hakodate

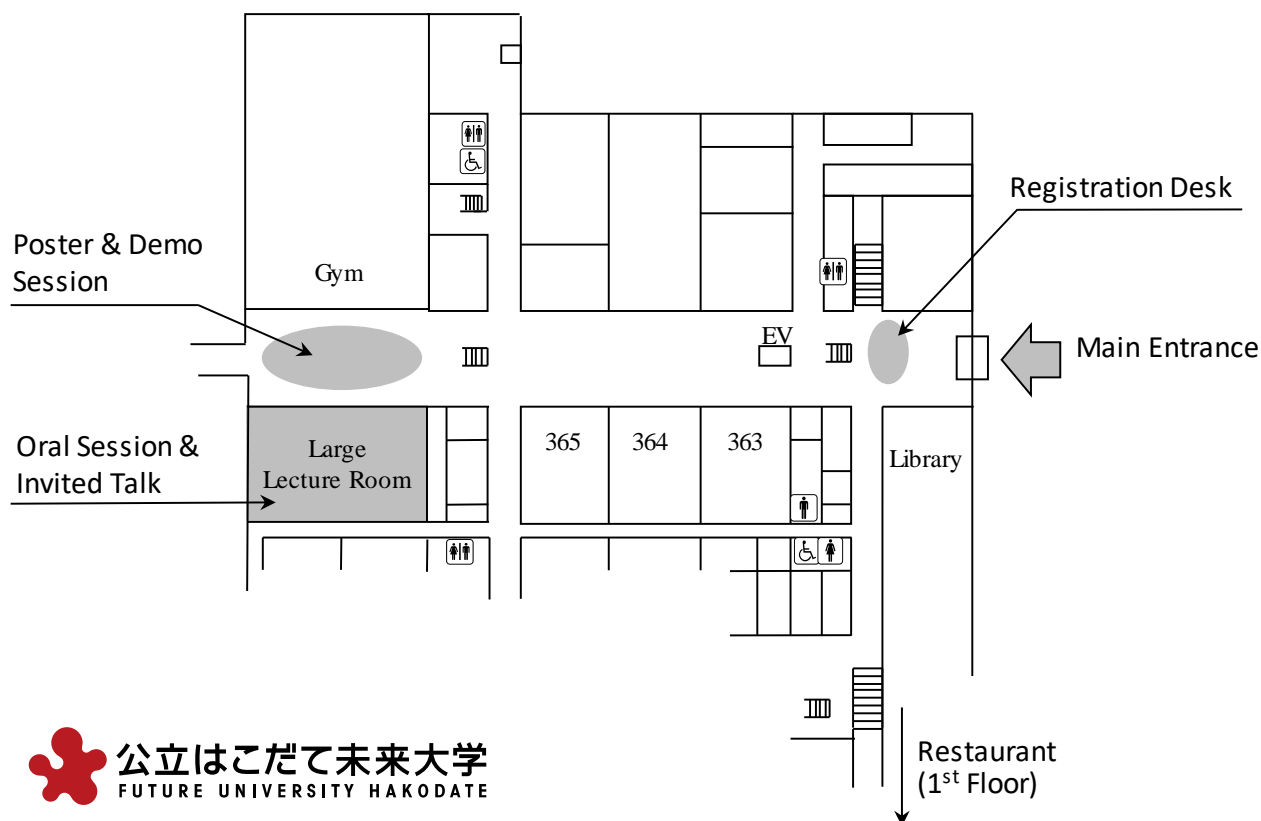
Abstract: Currently it is the third boom of artificial intelligence. Computers have won over the world championship at Go and computers can recognize human faces more accurately than humans. Artificial intelligence has become practical in the world at last. The recent boom is based on the premise of the existence of a lot of data. Since local cities like Hakodate are a treasure trove of data, it is suitable for research and development of artificial intelligence. Future University Hakodate is trying to solve regional problems using artificial intelligence. We talk examples of applying artificial intelligence to problems of public transportation and problems of fishery.



Bio: Prof. H. Matsubara graduated from graduate school of Tokyo Univ. (Dr. Eng) in 1986. He entered ElectroTechnical Laboratory, Japan (ETL, National Institute of Advanced Industrial Science and Technology at present) in 1986. He was a professor of Future University Hakodate Japan from 2000. He is now the vice president of Future University Hakodate. And he established a start-up company “Mirai Share” in Hakodate Japan and became the president. He has been and is now active in the research fields of artificial intelligence, game programming, tourism informatics and AI applications to local areas. He is one of founders of RoboCup, the international robot soccer initiative.

He was the president of Japanese Society for Artificial Intelligence from 2014 to 2016.

Venue: Future University Hakodate



Wi-Fi

Free Internet Wi-Fi will be available.

Smoking Policy

Smoking is not allowed inside the building and in all public places.

Banquet

Date and Time: Wednesday, February 21, starting at 19:00

Location: Four Points by Sheraton Hakodate (14-10 Wakamatsu-cho Hakodate)

- Free-bus will bring you to the banquet venue. The bus will depart 18:00 from FUN. Please wait at the main entrance of FUN.

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PROGRAM