TITLE: Multispectral and Hyperspectral Image Fusion by MS/HS Fusion Net
http://openaccess.thecvf.com/content_CVPR_2019/html/Xie_Multispectral_and_Hyperspectral_Image_Fusion_by_MSHS_Fusion_Net_CVPR_2019_paper.html
AUTHORS: Qi Xie, Minghao Zhou, Qian Zhao, Deyu Meng, Wangmeng Zuo, Zongben Xu
HIGHLIGHT: In this paper, we propose a model-based deep learning approach for merging an HrMS and LrHS images to generate a high-resolution hyperspectral (HrHS) image.

TITLE: Learning Attraction Field Representation for Robust Line Segment Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Xue_Learning_Attraction_Field_Representation_for_Robust_Line_Segment_Detection_CVPR_2019_paper.html
AUTHORS: Nan Xue, Song Bai, Fudong Wang, Gui-Song Xia, Tianfu Wu, Liangpei Zhang
HIGHLIGHT: This paper presents a region-partition based attraction field dual representation for line segment maps, and thus poses the problem of line segment detection (LSD) as the region coloring problem.

TITLE: Blind Super-Resolution With Iterative Kernel Correction
http://openaccess.thecvf.com/content_CVPR_2019/html/Gu_Blind_Super-Resolution_With_Iterative_Kernel_Correction_CVPR_2019_paper.html
AUTHORS: Jinjin Gu, Hannan Lu, Wangmeng Zuo, Chao Dong
HIGHLIGHT: In this paper, we propose an Iterative Kernel Correction (IKC) method for blur kernel estimation in blind SR problem, where the blur kernels are unknown.

TITLE: Video Magnification in the Wild Using Fractional Anisotropy in Temporal Distribution
http://openaccess.thecvf.com/content_CVPR_2019/html/Takeda_Video_Magnification_in_the_Wild_Using_Fractional_Anisotropy_in_Temporal_CVPR_2019_paper.html
AUTHORS: Shoichiro Takeda, Yasunori Akagi, Kazuki Okami, Megumi Isogai, Hideaki Kimata
HIGHLIGHT: In this paper, we present a novel method using fractional anisotropy (FA) to detect only meaningful subtle changes without the aforementioned requirements.

TITLE: Attentive Feedback Network for Boundary-Aware Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Feng_Attentive_Feedback_Network_for_Boundary-Aware_Salient_Object_Detection_CVPR_2019_paper.html
AUTHORS: Mengyang Feng, Huchuan Lu, Errui Ding
HIGHLIGHT: In this paper, we design the Attentive Feedback Modules (AFMs) to better explore the structure of objects.

TITLE: Heavy Rain Image Restoration: Integrating Physics Model and Conditional Adversarial Learning
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Heavy_Rain_Image_Restoration_Integrating_Physics_Model_and_Conditional_Adversarial_CVPR_2019_paper.html
AUTHORS: Ruoteng Li, Loong-Fah Cheong, Robby T. Tan
HIGHLIGHT: In this paper, we propose a novel method to address these problems.

TITLE: Learning to Calibrate Straight Lines for Fisheye Image Rectification
http://openaccess.thecvf.com/content_CVPR_2019/html/Xue_Learning_to_Calibrate_Straight_Lines_for_Fisheye_Image_Rectification_CVPR_2019_paper.html
AUTHORS: Zhucun Xue, Nan Xue, Gui-Song Xia, Weiming Shen
HIGHLIGHT: This paper presents a new deep-learning based method to simultaneously calibrate the intrinsic parameters of fisheye lens and rectify the distorted images.

TITLE: Camera Lens Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Chen_Camera_Lens_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Chang Chen, Zhiwei Xiong, Xinmei Tian, Zheng-Jun Zha, Feng Wu
HIGHLIGHT: In this paper, we investigate SR from the perspective of camera lenses, named as CameraSR, which aims to alleviate the intrinsic tradeoff between resolution (R) and field-of-view (V) in realistic imaging systems.

TITLE: Frame-Consistent Recurrent Video Deraining With Dual-Level Flow
http://openaccess.thecvf.com/content_CVPR_2019/html/Yang_Frame-Consistent_Recurrent_Video_Deraining_With_Dual-Level_Flow_CVPR_2019_paper.html
AUTHORS: Wenhan Yang, Jiaying Liu, Jiashi Feng
HIGHLIGHT: In this paper, we address the problem of rain removal from videos by proposing a more comprehensive framework that considers the additional degradation factors in real scenes neglected in previous works.

TITLE: Deep Plug-And-Play Super-Resolution for Arbitrary Blur Kernels

http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_Deep_Plug-And-Play_Super-Resolution_for_Arbitrary_Blur_Kernels_CVPR_2019_paper.html
AUTHORS: Kai Zhang, Wangmeng Zuo, Lei Zhang
HIGHLIGHT: In this paper, we propose a principled formulation and framework by extending bicubic degradation based deep SISR with the help of plug-and-play framework to handle LR images with arbitrary blur kernels.

TITLE: Sea-Thru: A Method for Removing Water From Underwater Images
http://openaccess.thecvf.com/content_CVPR_2019/html/Akkaynak_Sea-Thru_A_Method_for_Removing_Water_From_Underwater_Images_CVPR_2019_paper.html
AUTHORS: Derya Akkaynak, Tali Treibitz
HIGHLIGHT: Here, we present a method that recovers color with the revised model using RGBD images.

TITLE: Deep Network Interpolation for Continuous Imagery Effect Transition
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Deep_Network_Interpolation_for_Continuous_Imagery_Effect_Transition_CVPR_2019_paper.html
AUTHORS: Xintao Wang, Ke Yu, Chao Dong, Xiaoou Tang, Chen Change Loy
HIGHLIGHT: Unlike existing methods that require a specific design to achieve one particular transition (e.g., style transfer), we propose a simple yet universal approach to attain a smooth control of diverse imagery effects in many low-level vision tasks, including image restoration, image-to-image translation, and style transfer.

TITLE: Spatially Variant Linear Representation Models for Joint Filtering
http://openaccess.thecvf.com/content_CVPR_2019/html/Pan_Spatially_Variant_Linear_Representation_Models_for_Joint_Filtering_CVPR_2019_paper.html
AUTHORS: Jinshan Pan, Jiangxin Dong, Jimmy S. Ren, Liang Lin, Jinhui Tang, Ming-Hsuan Yang
HIGHLIGHT: Different from existing algorithms that rely on locally linear models or hand-designed objective functions to extract the structural information from the guidance image, we propose a new joint filter based on a spatially variant linear representation model (SVLRM), where the target image is linearly represented by the guidance image.

TITLE: Toward Convolutional Blind Denoising of Real Photographs
http://openaccess.thecvf.com/content_CVPR_2019/html/Guo_Toward_Convolutional_Blind_Denoising_of_Real_Photographs_CVPR_2019_paper.html
AUTHORS: Shi Guo, Zifei Yan, Kai Zhang, Wangmeng Zuo, Lei Zhang
HIGHLIGHT: In order to improve the generalization ability of deep CNN denoisers, we suggest training a convolutional blind denoising network (CBDNet) with more realistic noise model and real-world noisy-clean image pairs.

TITLE: Towards Real Scene Super-Resolution With Raw Images
http://openaccess.thecvf.com/content_CVPR_2019/html/Xu_Towards_Real_Scene_Super-Resolution_With_Raw_Images_CVPR_2019_paper.html
AUTHORS: Xiangyu Xu, Yongrui Ma, Wenxiu Sun
HIGHLIGHT: To solve the first problem, we propose a new pipeline to generate realistic training data by simulating the imaging process of digital cameras.

TITLE: ODE-Inspired Network Design for Single Image Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/He_ODE-Inspired_Network_Design_for_Single_Image_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Xiangyu He, Zitao Mo, Peisong Wang, Yang Liu, Mingyuan Yang, Jian Cheng
HIGHLIGHT: In this paper, we propose to adopt an ordinary differential equation (ODE)-inspired design scheme for single image super-resolution, which have brought us a new understanding of ResNet in classification problems.

TITLE: Blind Image Deblurring With Local Maximum Gradient Prior
http://openaccess.thecvf.com/content_CVPR_2019/html/Chen_Blind_Image_Deblurring_With_Local_Maximum_Gradient_Prior_CVPR_2019_paper.html
AUTHORS: Liang Chen, Faming Fang, Tingting Wang, Guixu Zhang
HIGHLIGHT: In this paper, we present a blind deblurring method based on Local Maximum Gradient (LMG) prior.

TITLE: Attention-Guided Network for Ghost-Free High Dynamic Range Imaging
http://openaccess.thecvf.com/content_CVPR_2019/html/Yan_Attention-Guided_Network_for_Ghost-Free_High_Dynamic_Range_Imaging_CVPR_2019_paper.html
AUTHORS: Qingsen Yan, Dong Gong, Qinfeng Shi, Anton van den Hengel, Chunhua Shen, Ian Reid, Yanning Zhang
HIGHLIGHT: To avoid the ghosting from the source, we propose a novel attention-guided end-to-end deep neural network (AHDRNet) to produce high-quality ghost-free HDR images.

TITLE: Learning Linear Transformations for Fast Image and Video Style Transfer
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Learning_Linear_Transformations_for_Fast_Image_and_Video_Style_Transfer_CVPR_2019_paper.html
AUTHORS: Xueting Li, Sifei Liu, Jan Kautz, Ming-Hsuan Yang
HIGHLIGHT: In this work, we present an approach for universal style transfer that learns the transformation matrix in a data-driven fashion.

TITLE: Local Detection of Stereo Occlusion Boundaries
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Local_Detection_of_Stereo_Occlusion_Boundaries_CVPR_2019_paper.html
AUTHORS: Jialiang Wang, Todd Zickler
HIGHLIGHT: This paper describes the local signatures for stereo occlusion boundaries that exist in a stereo cost volume, and it introduces a local detector for them based on a simple feedforward network with relatively small receptive fields.

TITLE: Bi-Directional Cascade Network for Perceptual Edge Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/He_Bi-Directional_Cascade_Network_for_Perceptual_Edge_Detection_CVPR_2019_paper.html
AUTHORS: Jianzhong He, Shiliang Zhang, Ming Yang, Yanhu Shan, Tiejun Huang
HIGHLIGHT: To extract edges at dramatically different scales, we propose a Bi-Directional Cascade Network (BDCN) structure, where an individual layer is supervised by labeled edges at its specific scale, rather than directly applying the same supervision to all CNN outputs.

TITLE: Single Image Deraining: A Comprehensive Benchmark Analysis
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Single_Image_Deraining_A_Comprehensive_Benchmark_Analysis_CVPR_2019_paper.html
AUTHORS: Siyuan Li, Iago Breno Araujo, Wenqi Ren, Zhangyang Wang, Eric K. Tokuda, Roberto Hirata Junior, Roberto Cesar-Junior, Jiawan Zhang, Xiaojie Guo, Xiaochun Cao
HIGHLIGHT: We present a comprehensive study and evaluation of existing single image deraining algorithms, using a new large-scale benchmark consisting of both synthetic and real-world rainy images.This dataset highlights diverse data sources and image contents, and is divided into three subsets (rain streak, rain drop, rain and mist), each serving different training or evaluation purposes.

TITLE: Dynamic Scene Deblurring With Parameter Selective Sharing and Nested Skip Connections
http://openaccess.thecvf.com/content_CVPR_2019/html/Gao_Dynamic_Scene_Deblurring_With_Parameter_Selective_Sharing_and_Nested_Skip_CVPR_2019_paper.html
AUTHORS: Hongyun Gao, Xin Tao, Xiaoyong Shen, Jiaya Jia
HIGHLIGHT: Inside the subnetwork of each scale, we propose a nested skip connection structure for the nonlinear transformation modules to replace stacked convolution layers or residual blocks.

TITLE: Events-To-Video: Bringing Modern Computer Vision to Event Cameras
http://openaccess.thecvf.com/content_CVPR_2019/html/Rebecq_Events-To-Video_Bringing_Modern_Computer_Vision_to_Event_Cameras_CVPR_2019_paper.html
AUTHORS: Henri Rebecq, Rene Ranftl, Vladlen Koltun, Davide Scaramuzza
HIGHLIGHT: In this work, we take a different view and propose to apply existing, mature computer vision techniques to videos reconstructed from event data.

TITLE: Feedback Network for Image Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Feedback_Network_for_Image_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Zhen Li, Jinglei Yang, Zheng Liu, Xiaomin Yang, Gwanggil Jeon, Wei Wu
HIGHLIGHT: In this paper, we propose an image super-resolution feedback network (SRFBN) to refine low-level representations with high-level information.

TITLE: Semi-Supervised Transfer Learning for Image Rain Removal
http://openaccess.thecvf.com/content_CVPR_2019/html/Wei_Semi-Supervised_Transfer_Learning_for_Image_Rain_Removal_CVPR_2019_paper.html
AUTHORS: Wei Wei, Deyu Meng, Qian Zhao, Zongben Xu, Ying Wu
HIGHLIGHT: The deep learning technique has been verified to be effective for this task and achieved state-of-the-art performance.

TITLE: EventNet: Asynchronous Recursive Event Processing

http://openaccess.thecvf.com/content_CVPR_2019/html/Sekikawa_EventNet_Asynchronous_Recursive_Event_Processing_CVPR_2019_paper.html
AUTHORS: Yusuke Sekikawa, Kosuke Hara, Hideo Saito
HIGHLIGHT: We propose EventNet, a neural network designed for real-time processing of asynchronous event streams in a recursive and event-wise manner.

TITLE: Recurrent Back-Projection Network for Video Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Haris_Recurrent_Back-Projection_Network_for_Video_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Muhammad Haris, Gregory Shakhnarovich, Norimichi Ukita
HIGHLIGHT: We proposed a novel architecture for the problem of video super-resolution.

TITLE: Cascaded Partial Decoder for Fast and Accurate Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Wu_Cascaded_Partial_Decoder_for_Fast_and_Accurate_Salient_Object_Detection_CVPR_2019_paper.html
AUTHORS: Zhe Wu, Li Su, Qingming Huang
HIGHLIGHT: In this paper, we propose a novel Cascaded Partial Decoder (CPD) framework for fast and accurate salient object detection.

TITLE: A Simple Pooling-Based Design for Real-Time Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Liu_A_Simple_Pooling-Based_Design_for_Real-Time_Salient_Object_Detection_CVPR_2019_paper.html
AUTHORS: Jiang-Jiang Liu, Qibin Hou, Ming-Ming Cheng, Jiashi Feng, Jianmin Jiang
HIGHLIGHT: We solve the problem of salient object detection by investigating how to expand the role of pooling in convolutional neural networks.

TITLE: Contrast Prior and Fluid Pyramid Integration for RGBD Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhao_Contrast_Prior_and_Fluid_Pyramid_Integration_for_RGBD_Salient_Object_CVPR_2019_paper.html
AUTHORS: Jia-Xing Zhao, Yang Cao, Deng-Ping Fan, Ming-Ming Cheng, Xuan-Yi Li, Le Zhang
HIGHLIGHT: In this paper, we utilize contrast prior, which used to be a dominant cue in none deep learning based SOD approaches, into CNNs-based architecture to enhance the depth information.

TITLE: Progressive Image Deraining Networks: A Better and Simpler Baseline
http://openaccess.thecvf.com/content_CVPR_2019/html/Ren_Progressive_Image_Deraining_Networks_A_Better_and_Simpler_Baseline_CVPR_2019_paper.html
AUTHORS: Dongwei Ren, Wangmeng Zuo, Qinghua Hu, Pengfei Zhu, Deyu Meng
HIGHLIGHT: Along with the deraining performance improvement of deep networks, their structures and learning become more and more complicated and diverse, making it difficult to analyze the contribution of various network modules when developing new deraining networks.

TITLE: An Iterative and Cooperative Top-Down and Bottom-Up Inference Network for Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_An_Iterative_and_Cooperative_Top-Down_and_Bottom-Up_Inference_Network_for_CVPR_2019_paper.html
AUTHORS: Wenguan Wang, Jianbing Shen, Ming-Ming Cheng, Ling Shao
HIGHLIGHT: This paper presents a salient object detection method that integrates both top-down and bottom-up saliency inference in an iterative and cooperative manner.

TITLE: Deep Stacked Hierarchical Multi-Patch Network for Image Deblurring
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_Deep_Stacked_Hierarchical_Multi-Patch_Network_for_Image_Deblurring_CVPR_2019_paper.html
AUTHORS: Hongguang Zhang, Yuchao Dai, Hongdong Li, Piotr Koniusz
HIGHLIGHT: To tackle the above problems, we present a deep hierarchical multi-patch network inspired by Spatial Pyramid Matching to deal with blurry images via a fine-to-coarse hierarchical representation.

TITLE: Turn a Silicon Camera Into an InGaAs Camera
http://openaccess.thecvf.com/content_CVPR_2019/html/Lv_Turn_a_Silicon_Camera_Into_an_InGaAs_Camera_CVPR_2019_paper.html
AUTHORS: Feifan Lv, Yinqiang Zheng, Bohan Zhang, Feng Lu
HIGHLIGHT: In this paper, we propose a novel solution for SWIR imaging using a common Silicon sensor, which has cheaper price, higher resolution and better technical maturity compared with the specialized InGaAs sensor.

TITLE: Low-Rank Tensor Completion With a New Tensor Nuclear Norm Induced by Invertible Linear Transforms
http://openaccess.thecvf.com/content_CVPR_2019/html/Lu_Low-
Rank_Tensor_Completion_With_a_New_Tensor_Nuclear_Norm_Induced_CVPR_2019_paper.html
AUTHORS: Canyi Lu, Xi Peng, Yunchao Wei
HIGHLIGHT: Our model and result greatly extend existing results in the low-rank matrix and tensor completion.

TITLE: Joint Representative Selection and Feature Learning: A Semi-Supervised Approach
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Joint_Representative_Selection_and_Feature_Learning_A_Semi-
Supervised_Approach_CVPR_2019_paper.html
AUTHORS: Suchen Wang, Jingjing Meng, Junsong Yuan, Yap-Peng Tan
HIGHLIGHT: In this paper, we propose a semi-supervised approach for representative selection, which finds a small set of representatives that can well summarize a large data collection.

TITLE: The Domain Transform Solver
http://openaccess.thecvf.com/content_CVPR_2019/html/Bapat_The_Domain_Transform_Solver_CVPR_2019_paper.html
AUTHORS: Akash Bapat, Jan-Michael Frahm
HIGHLIGHT: We present a novel framework for edge-aware optimization that is an order of magnitude faster than the state of the art while maintaining comparable results.

TITLE: CapSal: Leveraging Captioning to Boost Semantics for Salient Object Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_CapSal_Leveraging_Captioning_to_Boost_Semantics_for_Salient_O
bject_Detection_CVPR_2019_paper.html
AUTHORS: Lu Zhang, Jianming Zhang, Zhe Lin, Huchuan Lu, You He
HIGHLIGHT: To this end, we propose to leverage captioning as an auxiliary semantic task to boost salient object detection in complex scenarios.

TITLE: Phase-Only Image Based Kernel Estimation for Single Image Blind Deblurring
http://openaccess.thecvf.com/content_CVPR_2019/html/Pan_Phase-
Only_Image_Based_Kernel_Estimation_for_Single_Image_Blind_Deblurring_CVPR_2019_paper.html
AUTHORS: Liyuan Pan, Richard Hartley, Miaomiao Liu, Yuchao Dai
HIGHLIGHT: Unlike existing approaches which focus on approaching the problem by enforcing various priors on the blur kernel and the latent image, we are aiming at obtaining a high quality blur kernel directly by studying the problem in the frequency domain.

TITLE: Hierarchical Discrete Distribution Decomposition for Match Density Estimation
http://openaccess.thecvf.com/content_CVPR_2019/html/Yin_Hierarchical_Discrete_Distribution_Decomposition_for_Match_Density
_Estimation_CVPR_2019_paper.html
AUTHORS: Zhichao Yin, Trevor Darrell, Fisher Yu
HIGHLIGHT: In this paper, we propose Hierarchical Discrete Distribution Decomposition (HD^3), a framework suitable for learning probabilistic pixel correspondences in both optical flow and stereo matching.

TITLE: FOCNet: A Fractional Optimal Control Network for Image Denoising
http://openaccess.thecvf.com/content_CVPR_2019/html/Jia_FOCNet_A_Fractional_Optimal_Control_Network_for_Image_Denoisin
g_CVPR_2019_paper.html
AUTHORS: Xixi Jia, Sanyang Liu, Xiangchu Feng, Lei Zhang
HIGHLIGHT: Inspired by the fact that the fractional-order differential equation has long-term memory, in this paper we develop an advanced image denoising network, namely FOCNet, by solving a fractional optimal control (FOC) problem.

TITLE: Orthogonal Decomposition Network for Pixel-Wise Binary Classification
http://openaccess.thecvf.com/content_CVPR_2019/html/Liu_Orthogonal_Decomposition_Network_for_Pixel-
Wise_Binary_Classification_CVPR_2019_paper.html
AUTHORS: Chang Liu, Fang Wan, Wei Ke, Zhuowei Xiao, Yuan Yao, Xiaosong Zhang, Qixiang Ye
HIGHLIGHT: In this paper, we implement an Orthogonal Decomposition Unit (ODU) that transforms a convolutional feature map into orthogonal bases targeting at de-correlating neighboring pixels on convolutional features.

TITLE: Multi-Source Weak Supervision for Saliency Detection
http://openaccess.thecvf.com/content_CVPR_2019/html/Zeng_Multi-
Source_Weak_Supervision_for_Saliency_Detection_CVPR_2019_paper.html
AUTHORS: Yu Zeng, Yunzhi Zhuge, Huchuan Lu, Lihe Zhang, Mingyang Qian, Yizhou Yu
HIGHLIGHT: To this end, we propose a unified framework to train saliency detection models with diverse weak supervision sources.

TITLE: ComDefend: An Efficient Image Compression Model to Defend Adversarial Examples
http://openaccess.thecvf.com/content_CVPR_2019/html/Jia_ComDefend_An_Efficient_Image_Compression_Model_to_Defend_Adversarial_Examples_CVPR_2019_paper.html
AUTHORS: Xiaojun Jia, Xingxing Wei, Xiaochun Cao, Hassan Foroosh
HIGHLIGHT: In this paper, we propose an end-to-end image compression model to defend adversarial examples: ComDefend.

TITLE: Combinatorial Persistency Criteria for Multicut and Max-Cut
http://openaccess.thecvf.com/content_CVPR_2019/html/Lange_Combinatorial_Persistency_Criteria_for_Multicut_and_Max-Cut_CVPR_2019_paper.html
AUTHORS: Jan-Hendrik Lange, Bjoern Andres, Paul Swoboda
HIGHLIGHT: We propose persistency criteria for the multicut and max-cut problem as well as fast combinatorial routines to verify them.

TITLE: S4Net: Single Stage Salient-Instance Segmentation
http://openaccess.thecvf.com/content_CVPR_2019/html/Fan_S4Net_Single_Stage_Salient-Instance_Segmentation_CVPR_2019_paper.html
AUTHORS: Ruochen Fan, Ming-Ming Cheng, Qibin Hou, Tai-Jiang Mu, Jingdong Wang, Shi-Min Hu
HIGHLIGHT: We consider an interesting problem---salient instance segmentation.

TITLE: A Decomposition Algorithm for the Sparse Generalized Eigenvalue Problem
http://openaccess.thecvf.com/content_CVPR_2019/html/Yuan_A_Decomposition_Algorithm_for_the_Sparse_Generalized_Eigenvalue_Problem_CVPR_2019_paper.html
AUTHORS: Ganzhao Yuan, Li Shen, Wei-Shi Zheng
HIGHLIGHT: In this paper, we consider a new effective decomposition method to tackle this problem.

TITLE: UnOS: Unified Unsupervised Optical-Flow and Stereo-Depth Estimation by Watching Videos
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_UnOS_Unified_Unsupervised_Optical-Flow_and_Stereo-Depth_Estimation_by_Watching_Videos_CVPR_2019_paper.html
AUTHORS: Yang Wang, Peng Wang, Zhenheng Yang, Chenxu Luo, Yi Yang, Wei Xu
HIGHLIGHT: In this paper, we propose UnOS, an unified system for unsupervised optical flow and stereo depth estimation using convolutional neural network (CNN) by taking advantages of their inherent geometrical consistency based on the rigid-scene assumption.

TITLE: Learning Transformation Synchronization
http://openaccess.thecvf.com/content_CVPR_2019/html/Huang_Learning_Transformation_Synchronization_CVPR_2019_paper.html
AUTHORS: Xiangru Huang, Zhenxiao Liang, Xiaowei Zhou, Yao Xie, Leonidas J. Guibas, Qixing Huang
HIGHLIGHT: Instead of merely using the relative transformations as the input to perform transformation synchronization, we propose to use a neural network to learn the weights associated with each relative transformation.

TITLE: D2-Net: A Trainable CNN for Joint Description and Detection of Local Features
http://openaccess.thecvf.com/content_CVPR_2019/html/Dusmanu_D2-Net_A_Trainable_CNN_for_Joint_Description_and_Detection_of_CVPR_2019_paper.html
AUTHORS: Mihai Dusmanu, Ignacio Rocco, Tomas Pajdla, Marc Pollefeys, Josef Sivic, Akihiko Torii, Torsten Sattler
HIGHLIGHT: In this work we address the problem of finding reliable pixel-level correspondences under difficult imaging conditions.

TITLE: Recurrent Neural Networks With Intra-Frame Iterations for Video Deblurring
http://openaccess.thecvf.com/content_CVPR_2019/html/Nah_Recurrent_Neural_Networks_With_Intra-Frame_Iterations_for_Video_Deblurring_CVPR_2019_paper.html
AUTHORS: Seungjun Nah, Sanghyun Son, Kyoung Mu Lee
HIGHLIGHT: In this work, we aim to improve the accuracy of recurrent models by adapting the hidden states transferred from past frames to the frame being processed so that the relations between video frames could be better used.

TITLE: Learning to Extract Flawless Slow Motion From Blurry Videos
http://openaccess.thecvf.com/content_CVPR_2019/html/Jin_Learning_to_Extract_Flawless_Slow_Motion_From_Blurry_Videos_CVPR_2019_paper.html
AUTHORS: Meiguang Jin, Zhe Hu, Paolo Favaro
HIGHLIGHT: In this paper, we introduce the task of generating a sharp slow-motion video given a low frame rate blurry video.

TITLE: Natural and Realistic Single Image Super-Resolution With Explicit Natural Manifold Discrimination
http://openaccess.thecvf.com/content_CVPR_2019/html/Soh_Natural_and_Realistic_Single_Image_Super-Resolution_With_Explicit_Natural_Manifold_CVPR_2019_paper.html
AUTHORS: Jae Woong Soh, Gu Yong Park, Junho Jo, Nam Ik Cho
HIGHLIGHT: Therefore, in this paper, we present a new approach to reconstructing realistic super-resolved images with high perceptual quality, while maintaining the naturalness of the result.

TITLE: RF-Net: An End-To-End Image Matching Network Based on Receptive Field
http://openaccess.thecvf.com/content_CVPR_2019/html/Shen_RF-Net_An_End-To-End_Image_Matching_Network_Based_on_Receptive_Field_CVPR_2019_paper.html
AUTHORS: Xuelun Shen, Cheng Wang, Xin Li, Zenglei Yu, Jonathan Li, Chenglu Wen, Ming Cheng, Zijian He
HIGHLIGHT: This paper proposes a new end-to-end trainable matching network based on receptive field, RF-Net, to compute sparse correspondence between images.

TITLE: Fast Single Image Reflection Suppression via Convex Optimization
http://openaccess.thecvf.com/content_CVPR_2019/html/Yang_Fast_Single_Image_Reflection_Suppression_via_Convex_Optimization_CVPR_2019_paper.html
AUTHORS: Yang Yang, Wenye Ma, Yin Zheng, Jian-Feng Cai, Weiyu Xu
HIGHLIGHT: We propose a convex model to suppress the reflection from a single input image.

TITLE: A Mutual Learning Method for Salient Object Detection With Intertwined Multi-Supervision
http://openaccess.thecvf.com/content_CVPR_2019/html/Wu_A_Mutual_Learning_Method_for_Salient_Object_Detection_With_Intertwined_CVPR_2019_paper.html
AUTHORS: Runmin Wu, Mengyang Feng, Wenlong Guan, Dong Wang, Huchuan Lu, Errui Ding
HIGHLIGHT: To alleviate these issues, we propose to train saliency detection networks by exploiting the supervision from not only salient object detection, but also foreground contour detection and edge detection.

TITLE: Enhanced Pix2pix Dehazing Network
http://openaccess.thecvf.com/content_CVPR_2019/html/Qu_Enhanced_Pix2pix_Dehazing_Network_CVPR_2019_paper.html
AUTHORS: Yanyun Qu, Yizi Chen, Jingying Huang, Yuan Xie
HIGHLIGHT: In this paper, we reduce the image dehazing problem to an image-to-image translation problem, and propose Enhanced Pix2pix Dehazing Network (EPDN), which generates a haze-free image without relying on the physical scattering model.

TITLE: Assessing Personally Perceived Image Quality via Image Features and Collaborative Filtering
http://openaccess.thecvf.com/content_CVPR_2019/html/Korhonen_Assessing_Personally_Perceived_Image_Quality_via_Image_Features_and_Collaborative_CVPR_2019_paper.html
AUTHORS: Jari Korhonen
HIGHLIGHT: In this study, we aim to predict the personally perceived image quality by combining classical image feature analysis and collaboration filtering approach known from the recommendation systems.

TITLE: Single Image Reflection Removal Exploiting Misaligned Training Data and Network Enhancements
http://openaccess.thecvf.com/content_CVPR_2019/html/Wei_Single_Image_Reflection_Removal_Exploiting_Misaligned_Training_Data_and_Network_CVPR_2019_paper.html
AUTHORS: Kaixuan Wei, Jiaolong Yang, Ying Fu, David Wipf, Hua Huang
HIGHLIGHT: In this paper, we address these issues by exploiting targeted network enhancements and the novel use of misaligned data.

TITLE: A Variational EM Framework With Adaptive Edge Selection for Blind Motion Deblurring
http://openaccess.thecvf.com/content_CVPR_2019/html/Yang_A_Variational_EM_Framework_With_Adaptive_Edge_Selection_for_Blind_CVPR_2019_paper.html
AUTHORS: Liuge Yang, Hui Ji
HIGHLIGHT: This paper presented an interpretation of edge selection/reweighting in terms of variational Bayes inference, and therefore developed a novel variational expectation maximization (VEM) algorithm with built-in adaptive edge selection for blind deblurring.

TITLE: Viewport Proposal CNN for 360deg Video Quality Assessment
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Viewport_Proposal_CNN_for_360deg_Video_Quality_Assessment_CVPR_2019_paper.html
AUTHORS: Chen Li, Mai Xu, Lai Jiang, Shanyi Zhang, Xiaoming Tao
HIGHLIGHT: Thus, this paper proposes a viewport-based convolutional neural network (V-CNN) approach for VQA on 360deg video, considering both auxiliary tasks of viewport proposal and viewport saliency prediction.

TITLE: Beyond Gradient Descent for Regularized Segmentation Losses
http://openaccess.thecvf.com/content_CVPR_2019/html/Marin_Beyond_Gradient_Descent_for_Regularized_Segmentation_Losses_CVPR_2019_paper.html
AUTHORS: Dmitrii Marin, Meng Tang, Ismail Ben Ayed, Yuri Boykov
HIGHLIGHT: Our work suggests that network design/training should pay more attention to optimization methods.

TITLE: MAGSAC: Marginalizing Sample Consensus
http://openaccess.thecvf.com/content_CVPR_2019/html/Barath_MAGSAC_Marginalizing_Sample_Consensus_CVPR_2019_paper.html
AUTHORS: Daniel Barath, Jiri Matas, Jana Noskova
HIGHLIGHT: A method called, sigma-consensus, is proposed to eliminate the need for a user-defined inlier-outlier threshold in RANSAC.

TITLE: Understanding and Visualizing Deep Visual Saliency Models
http://openaccess.thecvf.com/content_CVPR_2019/html/He_Understanding_and_Visualizing_Deep_Visual_Saliency_Models_CVPR_2019_paper.html
AUTHORS: Sen He, Hamed R. Tavakoli, Ali Borji, Yang Mi, Nicolas Pugeault
HIGHLIGHT: Recently, data-driven deep saliency models have achieved high performance and have outperformed classical saliency models, as demonstrated by results on datasets such as the MIT300 and SALICON.

TITLE: Divergence Prior and Vessel-Tree Reconstruction
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_Divergence_Prior_and_Vessel-Tree_Reconstruction_CVPR_2019_paper.html
AUTHORS: Zhongwen Zhang, Dmitrii Marin, Egor Chesakov, Marc Moreno Maza, Maria Drangova, Yuri Boykov
HIGHLIGHT: We propose a new geometric regularization principle for reconstructing vector fields based on prior knowledge about their divergence.

TITLE: Unsupervised Domain-Specific Deblurring via Disentangled Representations
http://openaccess.thecvf.com/content_CVPR_2019/html/Lu_Unsupervised_Domain-Specific_Deblurring_via_Disentangled_Representations_CVPR_2019_paper.html
AUTHORS: Boyu Lu, Jun-Cheng Chen, Rama Chellappa
HIGHLIGHT: In this paper, we present an unsupervised method for domain-specific, single-image deblurring based on disentangled representations.

TITLE: Douglas-Rachford Networks: Learning Both the Image Prior and Data Fidelity Terms for Blind Image Deconvolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Aljadaany_Douglas-Rachford_Networks_Learning_Both_the_Image_Prior_and_Data_Fidelity_CVPR_2019_paper.html
AUTHORS: Raied Aljadaany, Dipan K. Pal, Marios Savvides
HIGHLIGHT: In this paper, we present a method called Dr-Net, which does not require any such estimate and is further able to invert the effects of the blurring in blind image recovery tasks.

TITLE: Speed Invariant Time Surface for Learning to Detect Corner Points With Event-Based Cameras
http://openaccess.thecvf.com/content_CVPR_2019/html/Manderscheid_Speed_Invariant_Time_Surface_for_Learning_to_Detect_Corner_Points_CVPR_2019_paper.html
AUTHORS: Jacques Manderscheid, Amos Sironi, Nicolas Bourdis, Davide Migliore, Vincent Lepetit
HIGHLIGHT: We propose a learning approach to corner detection for event-based cameras that is stable even under fast and abrupt motions.

TITLE: Training Deep Learning Based Image Denoisers From Undersampled Measurements Without Ground Truth and Without Image Prior
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhussip_Training_Deep_Learning_Based_Image_Denoisers_From_Undersampled_Measurements_Without_CVPR_2019_paper.html
AUTHORS: Magauiya Zhussip, Shakarim Soltanayev, Se Young Chun
HIGHLIGHT: To resolve this dilemma, we propose novel methods based on two well-grounded theories: denoiser-approximate message passing (D-AMP) and Stein's unbiased risk estimator (SURE).

TITLE: A Variational Pan-Sharpening With Local Gradient Constraints
http://openaccess.thecvf.com/content_CVPR_2019/html/Fu_A_Variational_Pan-Sharpening_With_Local_Gradient_Constraints_CVPR_2019_paper.html
AUTHORS: Xueyang Fu, Zihuang Lin, Yue Huang, Xinghao Ding

HIGHLIGHT: In this paper, a new variational model based on a local gradient constraint for pan-sharpening is proposed.

TITLE: Neural RGB(r)D Sensing: Depth and Uncertainty From a Video Camera
http://openaccess.thecvf.com/content_CVPR_2019/html/Liu_Neural_RGBrD_Sensing_Depth_and_Uncertainty_From_a_Video_Camera_CVPR_2019_paper.html
AUTHORS: Chao Liu, Jinwei Gu, Kihwan Kim, Srinivasa G. Narasimhan, Jan Kautz
HIGHLIGHT: In this paper, we propose a deep learning (DL) method to estimate per-pixel depth and its uncertainty continuously from a monocular video stream, with the goal of effectively turning an RGB camera into an RGB-D camera.

TITLE: DAVANet: Stereo Deblurring With View Aggregation
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhou_DAVANet_Stereo_Deblurring_With_View_Aggregation_CVPR_2019_paper.html
AUTHORS: Shangchen Zhou, Jiawei Zhang, Wangmeng Zuo, Haozhe Xie, Jinshan Pan, Jimmy S. Ren
HIGHLIGHT: By exploiting the two-view nature of stereo images, we propose a novel stereo image deblurring network with Depth Awareness and View Aggregation, named DAVANet.

TITLE: DVC: An End-To-End Deep Video Compression Framework
http://openaccess.thecvf.com/content_CVPR_2019/html/Lu_DVC_An_End-To-End_Deep_Video_Compression_Framework_CVPR_2019_paper.html
AUTHORS: Guo Lu, Wanli Ouyang, Dong Xu, Xiaoyun Zhang, Chunlei Cai, Zhiyong Gao
HIGHLIGHT: In this paper, taking advantage of both classical architecture in the conventional video compression method and the powerful non-linear representation ability of neural networks, we propose the first end-to-end video compression deep model that jointly optimizes all the components for video compression.

TITLE: SOSNet: Second Order Similarity Regularization for Local Descriptor Learning
http://openaccess.thecvf.com/content_CVPR_2019/html/Tian_SOSNet_Second_Order_Similarity_Regularization_for_Local_Descriptor_Learning_CVPR_2019_paper.html
AUTHORS: Yurun Tian, Xin Yu, Bin Fan, Fuchao Wu, Huub Heijnen, Vassileios Balntas
HIGHLIGHT: In this work, we explore the potential of \sos in the field of descriptor learning by building upon the intuition that a positive pair of matching points should exhibit similar distances with respect to other points in the embedding space.

TITLE: "Double-DIP": Unsupervised Image Decomposition via Coupled Deep-Image-Priors
http://openaccess.thecvf.com/content_CVPR_2019/html/Gandelsman_Double-DIP_Unsupervised_Image_Decomposition_via_Coupled_Deep-Image-Priors_CVPR_2019_paper.html
AUTHORS: Yosef Gandelsman, Assaf Shocher, Michal Irani
HIGHLIGHT: In this paper we propose a unified framework for unsupervised layer decomposition of a single image, based on coupled "Deep-image-Prior" (DIP) networks.

TITLE: Unprocessing Images for Learned Raw Denoising
http://openaccess.thecvf.com/content_CVPR_2019/html/Brooks_Unprocessing_Images_for_Learned_Raw_Denoising_CVPR_2019_paper.html
AUTHORS: Tim Brooks, Ben Mildenhall, Tianfan Xue, Jiawen Chen, Dillon Sharlet, Jonathan T. Barron
HIGHLIGHT: To address this, we present a technique to "unprocess" images by inverting each step of an image processing pipeline, thereby allowing us to synthesize realistic raw sensor measurements from commonly available Internet photos.

TITLE: Residual Networks for Light Field Image Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_Residual_Networks_for_Light_Field_Image_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Shuo Zhang, Youfang Lin, Hao Sheng
HIGHLIGHT: In this paper, a learning-based method using residual convolutional networks is proposed to reconstruct light fields with higher spatial resolution.

TITLE: Modulating Image Restoration With Continual Levels via Adaptive Feature Modification Layers
http://openaccess.thecvf.com/content_CVPR_2019/html/He_Modulating_Image_Restoration_With_Continual_Levels_via_Adaptive_Feature_Modification_CVPR_2019_paper.html
AUTHORS: Jingwen He, Chao Dong, Yu Qiao
HIGHLIGHT: We make a step forward by proposing a unified CNN framework that consists of little additional parameters than a single-level model yet could handle arbitrary restoration levels between a start and an end level.

TITLE: Second-Order Attention Network for Single Image Super-Resolution

http://openaccess.thecvf.com/content_CVPR_2019/html/Dai_Second-Order_Attention_Network_for_Single_Image_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Tao Dai, Jianrui Cai, Yongbing Zhang, Shu-Tao Xia, Lei Zhang
HIGHLIGHT: To address this issue, in this paper, we propose a second-order attention network (SAN) for more powerful feature expression and feature correlation learning.

TITLE: Devil Is in the Edges: Learning Semantic Boundaries From Noisy Annotations
http://openaccess.thecvf.com/content_CVPR_2019/html/Acuna_Devil_Is_in_the_Edges_Learning_Semantic_Boundaries_From_Noisy_CVPR_2019_paper.html
AUTHORS: David Acuna, Amlan Kar, Sanja Fidler
HIGHLIGHT: We propose a simple new layer and loss that can be used with existing learning-based boundary detectors.

TITLE: Path-Invariant Map Networks
http://openaccess.thecvf.com/content_CVPR_2019/html/Zhang_Path-Invariant_Map_Networks_CVPR_2019_paper.html
AUTHORS: Zaiwei Zhang, Zhenxiao Liang, Lemeng Wu, Xiaowei Zhou, Qixing Huang
HIGHLIGHT: In this paper, we study a natural self-supervision constraint for directed map networks called path-invariance, which enforces that composite maps along different paths between a fixed pair of source and target domains are identical.

TITLE: FilterReg: Robust and Efficient Probabilistic Point-Set Registration Using Gaussian Filter and Twist Parameterization
http://openaccess.thecvf.com/content_CVPR_2019/html/Gao_FilterReg_Robust_and_Efficient_Probabilistic_Point-Set_Registration_Using_Gaussian_Filter_CVPR_2019_paper.html
AUTHORS: Wei Gao, Russ Tedrake
HIGHLIGHT: In this paper, we contribute a novel probabilistic registration method that achieves state-of-the-art robustness as well as substantially faster computational performance than modern ICP implementations.

TITLE: Probabilistic Permutation Synchronization Using the Riemannian Structure of the Birkhoff Polytope
http://openaccess.thecvf.com/content_CVPR_2019/html/Birdal_Probabilistic_Permutation_Synchronization_Using_the_Riemannian_Structure_of_the_Birkhoff_CVPR_2019_paper.html
AUTHORS: Tolga Birdal, Umut Simsekli
HIGHLIGHT: We present an entirely new geometric and probabilistic approach to synchronization of correspondences across multiple sets of objects or images.

TITLE: Lifting Vectorial Variational Problems: A Natural Formulation Based on Geometric Measure Theory and Discrete Exterior Calculus
http://openaccess.thecvf.com/content_CVPR_2019/html/Mollenhoff_Lifting_Vectorial_Variational_Problems_A_Natural_Formulation_Based_on_Geometric_CVPR_2019_paper.html
AUTHORS: Thomas Mollenhoff, Daniel Cremers
HIGHLIGHT: We approach the relaxation and convexification of such vectorial variational problems via a lifting to the space of currents.

TITLE: A Sufficient Condition for Convergences of Adam and RMSProp
http://openaccess.thecvf.com/content_CVPR_2019/html/Zou_A_Sufficient_Condition_for_Convergences_of_Adam_and_RMSProp_CVPR_2019_paper.html
AUTHORS: Fangyu Zou, Li Shen, Zequn Jie, Weizhong Zhang, Wei Liu
HIGHLIGHT: In contrast with existing approaches, we introduce an alternative easy-to-check sufficient condition, which merely depends on the parameters of the base learning rate and combinations of historical second-order moments, to guarantee the global convergence of generic Adam/RMSProp for solving large-scale non-convex stochastic optimization.

TITLE: Guaranteed Matrix Completion Under Multiple Linear Transformations
http://openaccess.thecvf.com/content_CVPR_2019/html/Li_Guaranteed_Matrix_Completion_Under_Multiple_Linear_Transformations_CVPR_2019_paper.html
AUTHORS: Chao Li, Wei He, Longhao Yuan, Zhun Sun, Qibin Zhao
HIGHLIGHT: To tackle this problem, we propose a more general framework for LRMC, in which the linear transformations of the data are taken into account.

TITLE: MAP Inference via Block-Coordinate Frank-Wolfe Algorithm
http://openaccess.thecvf.com/content_CVPR_2019/html/Swoboda_MAP_Inference_via_Block-Coordinate_Frank-Wolfe_Algorithm_CVPR_2019_paper.html
AUTHORS: Paul Swoboda, Vladimir Kolmogorov
HIGHLIGHT: We present a new proximal bundle method for Maximum-A-Posteriori (MAP) inference in structured energy minimization problems.

TITLE: A Convex Relaxation for Multi-Graph Matching
http://openaccess.thecvf.com/content_CVPR_2019/html/Swoboda_A_Convex_Relaxation_for_Multi-Graph_Matching_CVPR_2019_paper.html
AUTHORS: Paul Swoboda, Dagmar Kainm"uller, Ashkan Mokarian, Christian Theobalt, Florian Bernard
HIGHLIGHT: We present a convex relaxation for the multi-graph matching problem.

TITLE: Competitive Collaboration: Joint Unsupervised Learning of Depth, Camera Motion, Optical Flow and Motion Segmentation
http://openaccess.thecvf.com/content_CVPR_2019/html/Ranjan_Competitive_Collaboration_Joint_Unsupervised_Learning_of_Depth_Camera_Motion_Optical_CVPR_2019_paper.html
AUTHORS: Anurag Ranjan, Varun Jampani, Lukas Balles, Kihwan Kim, Deqing Sun, Jonas Wulff, Michael J. Black
HIGHLIGHT: To that end, we introduce Competitive Collaboration, a framework that facilitates the coordinated training of multiple specialized neural networks to solve complex problems.

TITLE: Learning Parallax Attention for Stereo Image Super-Resolution
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Learning_Parallax_Attention_for_Stereo_Image_Super-Resolution_CVPR_2019_paper.html
AUTHORS: Longguang Wang, Yingqian Wang, Zhengfa Liang, Zaiping Lin, Jungang Yang, Wei An, Yulan Guo
HIGHLIGHT: In this paper, we propose a parallax-attention stereo superresolution network (PASSRnet) to integrate the information from a stereo image pair for SR.

TITLE: Knowing When to Stop: Evaluation and Verification of Conformity to Output-Size Specifications
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Knowing_When_to_Stop_Evaluation_and_Verification_of_Conformity_to_CVPR_2019_paper.html
AUTHORS: Chenglong Wang, Rudy Bunel, Krishnamurthy Dvijotham, Po-Sen Huang, Edward Grefenstette, Pushmeet Kohli
HIGHLIGHT: In this paper, we study the vulnerability of these models to attacks aimed at changing the output-size that can have undesirable consequences including increased computation and inducing faults in downstream modules that expect outputs of a certain length.

TITLE: Spatial Attentive Single-Image Deraining With a High Quality Real Rain Dataset
http://openaccess.thecvf.com/content_CVPR_2019/html/Wang_Spatial_Attentive_Single-Image_Deraining_With_a_High_Quality_Real_Rain_CVPR_2019_paper.html
AUTHORS: Tianyu Wang, Xin Yang, Ke Xu, Shaozhe Chen, Qiang Zhang, Rynson W.H. Lau
HIGHLIGHT: In this paper, we address the single image rain removal problem in two ways.

TITLE: Focus Is All You Need: Loss Functions for Event-Based Vision
http://openaccess.thecvf.com/content_CVPR_2019/html/Gallego_Focus_Is_All_You_Need_Loss_Functions_for_Event-Based_Vision_CVPR_2019_paper.html
AUTHORS: Guillermo Gallego, Mathias Gehrig, Davide Scaramuzza
HIGHLIGHT: We present a collection and taxonomy of twenty two objective functions to analyze event alignment in motion compensation approaches.

TITLE: Scalable Convolutional Neural Network for Image Compressed Sensing
http://openaccess.thecvf.com/content_CVPR_2019/html/Shi_Scalable_Convolutional_Neural_Network_for_Image_Compressed_Sensing_CVPR_2019_paper.html
AUTHORS: Wuzhen Shi, Feng Jiang, Shaohui Liu, Debin Zhao
HIGHLIGHT: In this paper, we propose a scalable convolutional neural network (dubbed SCSNet) to achieve scalable sampling and scalable reconstruction with only one model.

TITLE: Event Cameras, Contrast Maximization and Reward Functions: An Analysis
http://openaccess.thecvf.com/content_CVPR_2019/html/Stoffregen_Event_Cameras_Contrast_Maximization_and_Reward_Functions_An_Analysis_CVPR_2019_paper.html
AUTHORS: Timo Stoffregen, Lindsay Kleeman
HIGHLIGHT: In this work we examine the choice of reward used in contrast maximization, propose a classification of different rewards and show how a reward can be constructed that is more robust to noise and aperture uncertainty.

TITLE: Convolutional Neural Networks Can Be Deceived by Visual Illusions
http://openaccess.thecvf.com/content_CVPR_2019/html/Gomez-Villa_Convolutional_Neural_Networks_Can_Be_Deceived_by_Visual_Illusions_CVPR_2019_paper.html
AUTHORS: Alexander Gomez-Villa, Adrian Martin, Javier Vazquez-Corral, Marcelo Bertalmio

HIGHLIGHT: In particular, we show that CNNs trained for image denoising, image deblurring, and computational color constancy are able to replicate the human response to visual illusions, and that the extent of this replication varies with respect to variation in architecture and spatial pattern size.

TITLE: PDE Acceleration for Active Contours
http://openaccess.thecvf.com/content_CVPR_2019/html/Yezzi_PDE_Acceleration_for_Active_Contours_CVPR_2019_paper.html
AUTHORS: Anthony Yezzi, Ganesh Sundaramoorthi, Minas Benyamin
HIGHLIGHT: We extend their formulation to the PDE framework, specifically for the infinite dimensional manifold of continuous curves, to introduce acceleration, and its added robustness, into the broad range of PDE based active contours.

TITLE: Dichromatic Model Based Temporal Color Constancy for AC Light Sources
http://openaccess.thecvf.com/content_CVPR_2019/html/Yoo_Dichromatic_Model_Based_Temporal_Color_Constancy_for_AC_Light_Sources_CVPR_2019_paper.html
AUTHORS: Jun-Sang Yoo, Jong-Ok Kim
HIGHLIGHT: In this paper, we propose a novel approach to estimate the illuminant chromaticity of AC light source using high-speed camera.

TITLE: Semantic Attribute Matching Networks
http://openaccess.thecvf.com/content_CVPR_2019/html/Kim_Semantic_Attribute_Matching_Networks_CVPR_2019_paper.html
AUTHORS: Seungryong Kim, Dongbo Min, Somi Jeong, Sunok Kim, Sangryul Jeon, Kwanghoon Sohn
HIGHLIGHT: We present semantic attribute matching networks (SAM-Net) for jointly establishing correspondences and transferring attributes across semantically similar images, which intelligently weaves the advantages of the two tasks while overcoming their limitations.

TITLE: Skin-Based Identification From Multispectral Image Data Using CNNs
http://openaccess.thecvf.com/content_CVPR_2019/html/Uemori_Skin-Based_Identification_From_Multispectral_Image_Data_Using_CNNs_CVPR_2019_paper.html
AUTHORS: Takeshi Uemori, Atsushi Ito, Yusuke Moriuchi, Alexander Gatto, Jun Murayama
HIGHLIGHT: In this paper, we propose a new biometric identification system based solely on a skin patch from a multispectral image.

TITLE: Large-Scale Distributed Second-Order Optimization Using Kronecker-Factored Approximate Curvature for Deep Convolutional Neural Networks
http://openaccess.thecvf.com/content_CVPR_2019/html/Osawa_Large-Scale_Distributed_Second-Order_Optimization_Using_Kronecker-Factored_Approximate_Curvature_for_Deep_CVPR_2019_paper.html
AUTHORS: Kazuki Osawa, Yohei Tsuji, Yuichiro Ueno, Akira Naruse, Rio Yokota, Satoshi Matsuoka
HIGHLIGHT: We propose an alternative approach using a second order optimization method that shows similar generalization capability to first order methods, but converges faster and can handle larger mini-batches.