# 2022 18th IEEE International **Conference on Advanced Video** and Signal Based Surveillance (AVSS 2022)

Madrid, Spain 29 November - 2 December 2022



**IEEE Catalog Number: CFP22AVS-POD ISBN**:

978-1-6654-6383-6

## Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP22AVS-POD

 ISBN (Print-On-Demand):
 978-1-6654-6383-6

 ISBN (Online):
 978-1-6654-6382-9

#### **Additional Copies of This Publication Are Available From:**

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



### **AVSS 2022**

### The 18th IEEE International Conference on Advanced Video and Signalbased Surveillance

#### **Table of Contents**

Surveillance Systems and Applications		
01: Height Normalizing Image Transform for Efficient Scene Specific Pedestrian Detection	1	
02: Accelerated Blind Deblurring Method via Video-based Estimation in Next Point Spread Functions for Surveillance		
03: A Visual Surveillance System to Observe Realistic Road User Behavior for Improved Pedestrian and Cyclist Safety at Crossroads		
04: UPM-GTI-Face: A dataset for the evaluation of the impact of distance and masks in face detection and recognition systems		
05: Impact of Video Compression on the Performance of Object Detection Systems for Surveillance Applications	36	
06: Robust Unseen Video Understanding for Various Surveillance Environments	44	
Anomaly Detection and Recognition		
07: Simultaneous Localization and Anomaly Detection from First-Person Video Data through a Coupled Dynamic Bayesian Network Model	52	
08: Spatial-Temporal Transformer for Crime Recognition in Surveillance Videos	60	
09: FPDM: Fisheye Panoptic segmentation dataset for Door Monitoring		
10: Spatio-temporal predictive tasks for abnormal event detection in videos		
11: Violence Detection using 3D Convolutional Neural Networks		
12: Utilizing Crowd Collectiveness to Enhance Bottleneck Detection Based on the Lagrangian Framework	92	
Biometrics and Person Re-Identification		
13: FRIDA: Fisheye Re-Identification Dataset with Annotations	100	
14: Fast High-Resolution Fingerprint Recognition using Domain-Knowledge Infused Global Descriptors	108	
15: REET: Region Enhanced Transformer for Person Re- Identification	116	
16: MASK-MORPH: Does Morphing of Custom 3D Face Masks Threatens the Face Recognition Systems?	124	
17: Exploring attention on faces: similarities between humans and Transformers	132	

18: Attribute De-biased Vision Transformer (AD-ViT) for Long-Term Person Re-identification	140	
Detection and Tracking		
19: FBMOT: Flow Bridges the Gap between Detection and Tracking in Multiple Object Tracking	148	
20: A Ship Detection Model Based on YOLOX with Lightweight Adaptive Channel Feature Fusion and Sparse Data Augmentation	155	
21: Fusion Tree Network for RGBT Tracking	163	
22: Tracking Failure Prediction for Siamese Trackers Based on Channel Feature Statistics	171	
23: Refining Action Boundaries for One-stage Detection	179	
24: Detection-aware multi-object tracking evaluation	187	
Segmentation and Estimation		
25: Deep Learning and Computer Vision Techniques for Estimating Snow Coverage on Roads using Surveillance Cameras	195	
26: Crowd counting Using DRL-based segmentation and RL- based density estimation	203	
27: A Data-Driven Approach for the Localization of Interacting Agents via a Multi-Modal Dynamic Bayesian Network Framework	211	
28: Dynamic Background Subtraction by Generative Neural Networks	219	
29: Background Subtraction Network Module Ensemble for Background Scene Adaptation	227	
30: REET: Graph Structure Learning Boosted Neural Network for Image Segmentation	235	
Other Recognition Tasks in Computer Vision		
31: Deep Network for Extremely Low-Resolution Human Action Recognition	243	
32: Reliability Scoring for the Recognition of Degraded License Plates		
33: Learning Occlusion-Aware Dense Correspondences for Multi-Modal Images		
34: Hand-Object Interaction Reasoning		
35: Real time Vehicle Color Recognition on a budget: an investigation on the usage of CNN architectures	275	
36: Customer Behavior Recognition Adaptable for Changing Targets in Retail Environments	283	
Sensor Processing and Data Generation		
37: Robust Camera Calibration with a Single Image by Planar Homography	291	
38: SAR Image Denoising in High Dynamic Range with Speckle and Thermal Noise Refinement Modeling	298	
39: Dual Camera Based High Spatio-Temporal Resolution Video Generation For Wide Area Surveillance	306	

10: Real Image Super-Resolution using GAN through modeling of LR and HR process		
1: FBMOT: Consolidated Adversarial Network for Video De- raining and De-hazing		
2: Inception-based Deep Learning Architecture for 3D Point Cloud Completion		
Representation Learnin	g	
	Feature Alignment and Selection for Imbalance 3D Point Cloud Object tection	337
44: Deformable Modules	for Flexible Feature Sampling on Vision Transformer	345
45: Temporal-Invariant V	ideo Representation Learning with Dynamic Temporal Resolutions	353
	der-Decoder Network with Multi-scale Feature Pulling for Detecting cal Changes From Video Scene	361
47: RCRL: Replay-based	Continual Representation Learning in Multi-task Super-Resolution	369
Audio-Visual Detection	and Classification	
48: Detection of birds in a	a 3D environment referring to audio- visual information	384
• •	of Closely-spaced Speakers by Exploiting Auxiliary Direction of Arrival ormation within a U-Net Architecture	391
50: A Spatio-temporal De	ep Learning Approach for Underwater Acoustic Signals Classification	399
51: Dual-valued Neural N	letworks	406
•	of Cars and Pedestrians by Deep Neural Networks from Unit-Sharing e-Shot NAS	414
53: An Experimental Stud Au	dy of the Concept Drift Challenge in Farm Intrusion Detection using dio	422
DeepView Workshop		
54: Vision Transformers f	or Road Accident Detection from Dashboard Cameras	430
55: Statistical Analysis or	Channel-wise Cross-correlation Features in Siamese Trackers	438
56: High-Dimensional Ind	exing Scheme for Scene Graph Retrieval	443
57: Automated Single Pa	rticle Growth Measurement using Segmentation	448