AVSS 2018

15th IEEE International Conference on Advanced Video and Signal-based Surveillance

27-30 November 2018, Auckland University of Technology, Auckland, New Zealand

Handbook

AVSS18 Committee

Auckland, New Zealand

https://avss2018.org

Contents

1   Introduction

The organising committee of the 15th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS), 27-30 November 2018, welcomes you to Auckland, New Zealand. The conference is hosted by the Auckland University of Technology (AUT).

AVSS conference focuses on underlying theory, methods, systems, and applications of surveillance and invited submissions in areas listed below, especially cross-disciplinary and game-changing ones. AVSS is the premier annual international conference in the field of video and signal-based surveillance that brings together experts from academia, industry, and government to advance theories, methods, systems, and applications related to surveillance.

AVSS conference is sponsored by the IEEE, in particular the IEEE Signal Processing Society (IVMSP TC) and the IEEE Computer Society (PAMI TC). There will be a main conference as well as multiple associated workshops, and the AVSS 2018 proceedings will be published by the IEEE.

These have been the important dates:

- *Preliminary Abstract Submission*: 1 June 2018

- *Paper Submission*: 30 June 2018 (23:59:59 PST)

- *Notification to Authors*: 1 September 2018

- *Early-bird Registration Deadline*: 15 September 2018

- *Workshop Papers Due*: 7 September 2018

- *Camera Ready Papers Due*: 15 September 2018

- *Conference Dates*: 27-30 November 2018

The Best Paper Award of AVSS18

The best paper award at AVSS 2018 is sponsored by the MDPI Journal of Imaging.

General Chairs

- Mohan Kankanhalli (National University of Singapore, Singapore)

- Reinhard Klette (Auckland University of Technology, New Zealand)

Technical Program Chairs

- Andrea Cavallaro (Queen Mary University of London, United Kingdom)

- Wei Qi Yan (Auckland University of Technology, New Zealand)

Area Chairs

- ANALYTICS, SITUATION AWARENESS & DECISION-MAKING
  Anthony Hoogs (Kitware, Inc., USA)
  Tiejun Huang (Peking University, China)

- PROCESSING, DETECTION, TRACKING & RECOGNITION
  Simone Calderara (UNIMORE, Modena, Italy)
  Bohyung Han (Pohang University of Science and Technology, Korea)

- SECURITY & PRIVACY
  Patrick Grother (National Institute of Standards and Technology, USA)
  Rizwan Asghar (University of Auckland, New Zealand)

- SENSOR-CENTRIC PROCESSING
  Saibal Mukhopadhyay (Georgia Institute of Technology, USA)
  Ruli Wang (Massey University, New Zealand)

- SURVEILLANCE SYSTEMS AND APPLICATIONS
  Alessia Saggese (University of Salerno, Italy)
  Xianfeng Zhao (Chinese Academy of Sciences, China)

- VISUALIZATION AND INTERACTION CONCEPTS FOR SURVEILLANCE SYSTEMS
  Amy Loufti (University of Modena and Reggio Emilia, Italy)
  Faith Kurugollu (University of Derby, UK)

General Workshop Chairs

- Pradeep Atrey (State University of New York at Albany, USA)

- Cosimo Distante (Institute of Applied Sciences and Intelligent Systems, CNR, Italy)

- Feng Liu (Chinese Academy of Sciences, China)

Organization Chairs

- Minh Nguyen (Auckland University of Technology, New Zealand)

- Zixiang Xiong (Texas A& M University, USA)

Industrial Chairs

- John Houlker (Wellington, New Zealand)

- Lidong Zhai (Chinese Academy of Sciences, China)

Challenge Chairs

- Chang-Tsun Li (Charles Sturt University, Australia)

- Chao Shen (Xi'an Jiaotong University, China)

Poster Chairs

- Parma Nand (Auckland University of Technology, New Zealand)

- Hsiang-Jen Chien (Auckland Transport, New Zealand)

- Laiyun Qing (University of Chinese Academy of Sciences, China)

Publicity Chairs

- Alvis Fong (Western Michigan University, USA)

- Xiaotian Wu (Jinan University, China)

- Eduardo Monari (Karlsruhe Institute of Technology, Germany)

Publication Chairs

- Richard Green (University of Canterbury, New Zealand)

- Manoranjan Mohanty (University of Auckland, New Zealand)

Asia Liaison

- Mukesh Saini (Indian Institute of Technology, India)

- Mutsuhiro Terauchi (Hiroshima International University, Japan)

Australia Liaison

- Xufeng Lin (Charles Sturt University, Australia)

- Jian Yu (Auckland University of Technology, New Zealand)

America Liaison

- Domingo Mery (Santiago, Chile)

- Faisal Qureshi (University of Ontario Institute of Technology, Canada)

- Arun Ross (Michigan State University, USA)

Europe Liaison

- Nicolai Petkov (Groningen, The Netherlands)

- Dmitry A. Tarasov (Ural Federal University, Russia)

- Bernhard Rinner (Alpen-Adria-Universität Klagenfurt, Austria)

Conference Website Design and Editing

- Andrew Chen (University of Auckland, New Zealand)

2   Message from the Local General Chair

A friendly welcome to all the participants of AVSS18 at Auckland, New Zealand.

AVSS is a flagship series of IEEE conferences, and it is our great honour to have this annual event in beautiful Auckland at AUT, the youngest university of New Zealand.

New Zealand is famous for its picturesque landscapes. Our natural scenes have been recorded in movies and attract regularly visitors from all over the world. Auckland is known as the "city of sails", due to the wide popularity of water sports activities. I hope that you also will have some opportunities to enjoy our city, or even some parts of our land, outside of the big city.

This year's AVSS issue emphasises on deep learning, sensors, and security. The theme matches red-hot research topics of digital surveillance and artificial intelligence, such as human behaviour analysis, autonomous vehicles, and so forth.

I hope that all the participants enjoy this conference and spend a wonderful early-summer time at Auckland, New Zealand.
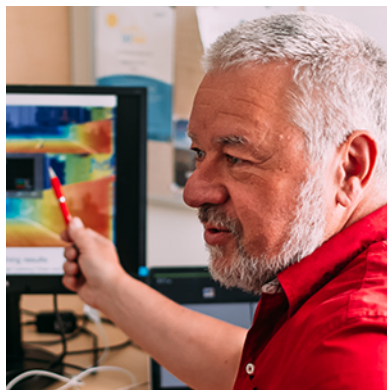
Prof. Reinhard Klette, General Co-Chair of AVSS 2018

Short Biography Professor Reinhard Klette is a Fellow of the Royal Society of New Zealand. Previously he had full professor positions at the Academy of Sciences, Berlin, at the Technical University Berlin, and at Auckland University. He is now a full professor at AUT, and the director of the Center for Robotics & Vision (CeRV).

He has close to 500 publications, among them about 100 peer-reviewed journal papers, three text books (on image processing, computer vision for 3D shape recovery, and computer vision in general), five monographs (on parallel computing, digital geometry, panoramic imaging, shortest Euclidean paths, and computer vision for modern cars), 24 edited research books and conference proceedings, 31 peer-reviewed book chapters, and more than 300 peer-reviewed conference papers in the areas of computer vision, pattern recognition, computational photography, robotics, artificial intelligence, computational geometry, parallel computing, algorithm design, digital geometry and topology, and inductive inference of recursive functions. So far he supervised 31 PhD students to their successful completion, and also more than 100 masters projects.

3   Local Organization Chair's Welcome

As the local organizing chair of the 15th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS 2018), I would like to express my warm welcome to all the attendees: Welcome to Auckland - the "City of Sails". I hope that you all will have a great time here in beautiful New Zealand. If this is your first time here, you may find some of the following information useful.

Transportation from the Airport to and around the city (⋆ New Zealand has very strict biosecurity):

From the Auckland International Airport, you can get to the city centre by bus, which costs 18 NZD one way (1 NZD = 0.67 USD), visit `www.skybus.co.nz/auckland-city-express/buy-tickets`, by shuttle bus (17.5 NZD) per person, see `www.supershuttle.co.nz`, or by Uber or taxi, which costs about 50-70 NZD to the CBD (09-300 3000 is Auckland Co-op's taxi phone number).

Conference Venue and Conference Dinner Locations:

The conference venue is at AUT's city campus, WA & WG building, Auckland Central. All challenges, workshops, and tutorials will be held at WG building, Level 9 classrooms. The *Welcome Reception* will be in room WA 224. The main conference is in the same room WA 224 of the Conference Centre. The Poster Display Presentations will be at WG 201.

During the conference days, you will be served morning tea, lunch, and afternoon tea. On top of that, the *conference dinner* will be at 6:30 pm on Thursday 29 November 2018. A *survivors party* will be at 6:30 pm on Friday 30 November 2018. The conference dinner is held at the beautiful Wintergarden Pavilion (20 Kiosk Rd); this is about 22 minutes walk (recommended) from the conference venue. The walk is relaxing, through the beautiful Auckland Domain, with a variety of landscapes from open fields, to formal gardens and statues, to native bush walkways and a duck pond. On Thursday 29 November 2018, we will gather at the conference venue at 5:15 pm and start walking there together.

A few Hints for Auckland:

Within Auckland Central you can find many restaurants and food courts within walking distance. You can also find many unique restaurants on Lorne Street and near the water front. Google Map and Apple Map work well in New Zealand for navigation (using cars, walks, or public transportation).

Auckland is a relatively small city, you may get quickly to public conservation areas, beaches, rivers and mountains, typically within a 10 to 20 minutes drive (outside rush hours). To get around, Uber and taxis are convenient.

Public transportation is improving in Auckland, but still not yet perfect. You may buy an AT Hop card, to be used on the bus, train, and ferry (`at.govt.nz/bus-train-ferry/at-hop-card`). On a beautiful afternoon, you may walk down to the waterfront, take a 15-minute ferry to Devonport (Auckland's seaside village) and enjoy the breathtaking sea and city views; have dinner there and go back by bus. Some other points of interest within walking distance from the venue are the Sky tower, Auckland Art Gallery, Albert Park, Auckland Domain with Auckland Museum, the Viaduct, the Silo Park, or Parnell village.

A few Hints for New Zealand:

Outside of Auckland, you could think of visiting some of the following great points of interest: On the North Island, Waitomo Cave, the Hobbiton Movie Set, the Bay of Islands, Lake Taupo and the Tongariro National Park, Rotorua, or Coromandel Peninsula; on the South Island we have Queenstown, Fiordland National Park and Milford Sound, Fox and Franz Josef Glaciers, Abel Tasman National Park and the Abel Tasman Coast Track, or the Aoraki / Mount Cook National Park.

Emergency Contacts:

If you find yourself in trouble, please contact the following numbers: In any emergency, call 111 (for fire, police or ambulance); for matters on AUT campus, you can call our Security on +64 9 921 9997, or just call myself (Minh Nguyen) on +64 21 175 4956.

I hope that you enjoy your stay here in New Zealand.

Dr. Minh Nguyen, Local Organization Chair of AVSS 2018

Short Biography Dr. Minh Nguyen is currently a Senior Lecturer, an Academic Advisor for AUT's School of Engineering, Computing and Mathematical Sciences. He is also a Fellow of the Higher Education Academy (UK Professional Standards Framework for teaching and learning support in higher education). Originally from Vietnam, Minh has been living in New Zealand since 2001. He completed his PhD at the University of Auckland in early 2014. Minh's research interests are in the fields of Computer Vision, Augmented and Virtual Reality, Artificial Intelligence, Internet Programming, and Mobile Applications. Minh has also extensive experience in implementing optimised applications for client server architecture systems.

AVSS18 Road Maps

Auckland Airport

Auckland Airport

IATA: AKL · ICAO: NZAA

Auckland Airport (37°00'29"S 174°47'30"E)

Route Map

The Map of Auckland City

SUN 11/25	MON 11/26	TUE 11/27	WED 11/28	THU 11/29	FRI 11/30	SAT 12/1
20°/14°	19°/12°	19°/13°	19°/14°	21°/14°	19°/14°	19°/15°
Mostly cloudy, a thunderstorm	Clouds and sun; windy	Times of clouds and sun	Times of clouds and sun	An afternoon shower in spots	Low clouds	Rain; windy
Hist. Avg. 19°/12°	Hist. Avg. 19°/13°	Hist. Avg. 19°/13°	Hist. Avg. 19°/13°	Hist. Avg. 19°/13°	Hist. Avg. 19°/13°	Hist. Avg. 20°/13°

Expected Auckland Weather for the Week of the AVSS18 Conference
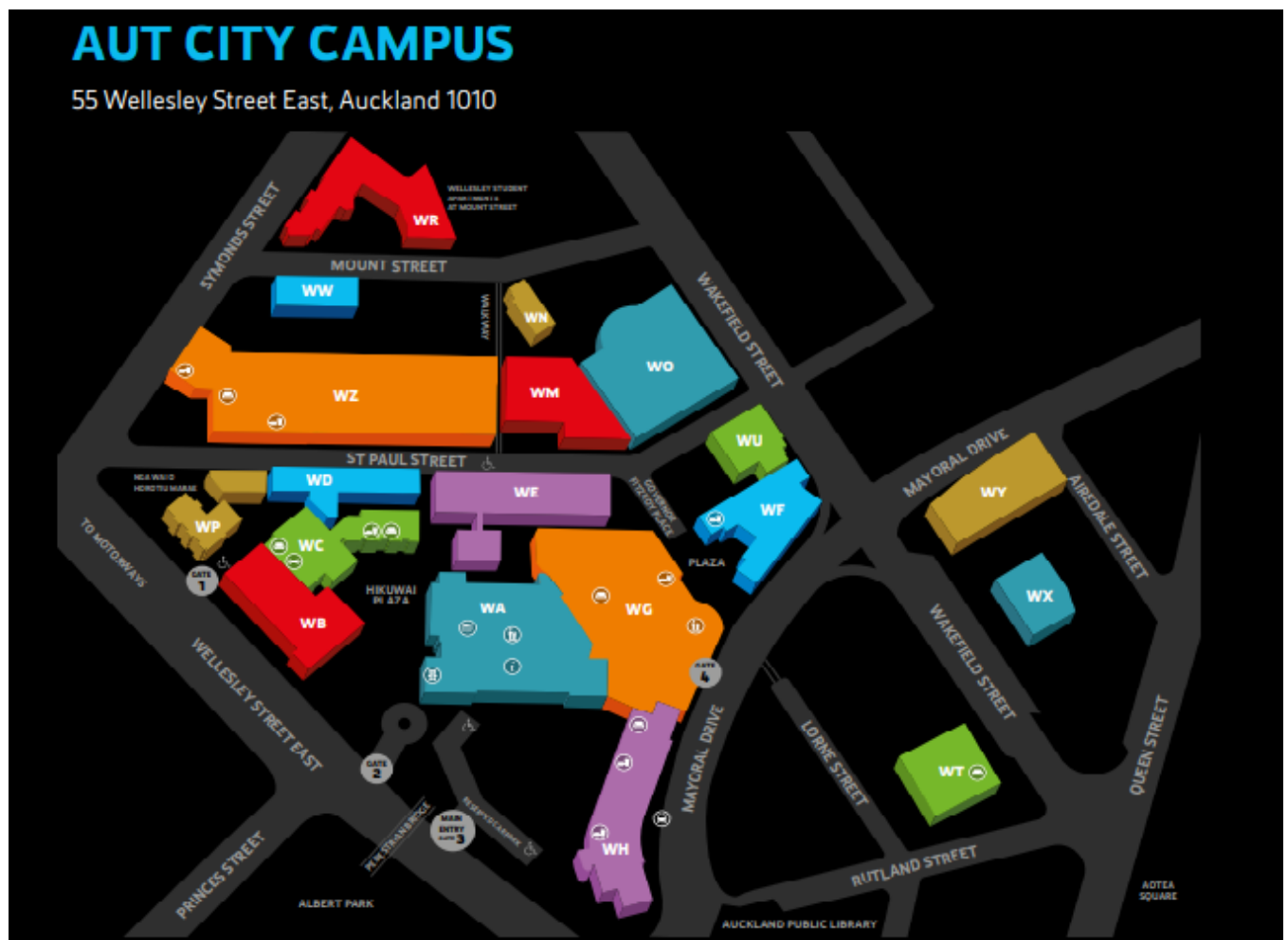
The Map of AUT City Campus

4   Program

- Each oral presentation should be 20 minutes in total (15 mins talk, 5 mins setup/questions)

- 1 min spotlight presentations will be given for each poster at the beginning of the poster sessions

- Authors of oral presentations have the chance to display a poster after their presentations

- An *editorial board meeting* will be during afternoon tea time on Day 2

- An introduction to AVSS 2019 is given at the Conference Dinner on Day 2

AVSS18 Program at a Glance

Time	Workshops (**27** Nov 2018) (Tuesday)	Day 1 (**28** Nov 2018) (Wednesday)	Day 2 (**29** Nov 2018) (Thursday)	Day 3 (**30** Nov 2018) (Friday)
8.30–8.50 am	Registration (WG 201)	Registration (WG 201)	Registration (WG 201)	Registration (WG 201)
8.50–9.00 am	Registration (WG 201)	Opening Ceremony (WA 224)	Registration (WG 201)	Registration (WG 201)
9.00–10.00 am	Session 1 (WG Level 9)	Keynote 1 (WA 224)	Keynote 3 (WA 224)	Keynote 4 (WA 224)
10.00–10.30 am	Session 1 (WG Level 9)	Poster 1 (WG 201)	Poster 3 (WG 201)	Poster 5 (WG 201)
10.30–11.00 am	**Morning Tea** (WG 201)	**Morning Tea** (WG 201)	**Morning Tea** (WG 201)	**Morning Tea** (WG 201)
11.00–12.00 pm	Session 2 (WG Level 9)	Oral Session 1 (WA 224)	Oral Session 3 (WA 224)	Oral Session 5 (WA 224)
12.00–12.30 pm	Session 2 (WG Level 9)	Poster 2 (WG 201)	Poster 4 (WG 201)	Poster 6 (WG 201)
12.30 – 13.30 pm	**Lunch** (WG 201)	**Lunch** (WG 201)	**Lunch** (WG 201)	**Lunch** (WG 201)
13.30 - 15.00 pm	Session 3 (WG Level 9)	Keynote 2 (WA 224)	Oral Session 4 (WA 224)	Oral Session 6 (WA 224)
15.00 – 15.30 pm	**Afternoon Tea** (WG 201)	**Afternoon Tea** (WG 201)	**Afternoon Tea** (WG 201)	**Afternoon Tea** (WG 201)
15.30 – 17.10 pm	Session 4 (WG Level 9)	Oral Session 2 (WA 224)		Oral Session 7 (WA 224)
18.30–21.00 pm	City Tour	Welcome Reception (WA 224)	Conference Dinner Wintergarden Pavilion (Auckland Domain)	Farewell Paper Awards (WA 224)

4.1   Challenge I: Advanced Traffic Monitoring

The increasing progress of transportation systems has caused a tremendous increase in a demand for smart systems capable of monitoring traffic states and street safety. Fundamental to these applications are algorithms for multi-object detection and multi-object tracking. It is thus important for practitioners to know the pros and cons of different works in these categories. It is goal of this Challenge to provide a comprehensive performance evaluation of state-of-the-art detection and tracking algorithms.

The challenge is based on UA-DETRAC, a real-world multi-object detection and multi-object tracking benchmark. The dataset is based on a huge set of traffic video sequences opportunely annotated with bounding boxes, tracking paths, and difficult/environment difficulty levels. We divided the challenge in two different task (detection and tracking), and two different degrees of difficulty.

The challenge has been organized in conjunction with the International Workshop on Traffic and Street Surveillance for Safety and Security (IWT4S), currently proposed in AVSS 2018, in order to guarantee the publication of papers associated with the solutions proposed for the challenge.

Further Details: `iwt4s2018.wordpress.com/`

Organizers:

- Marco Del Coco (Institute of Applied Sciences and Intelligent Systems, CNR, Italy)

- Siwei Lyu (University at Albany, USA)

- Pierluigi Carcagni (Institute of Applied Sciences and Intelligent Systems, CNR, Italy)

- Ming-Ching Chang (University at Albany, USA)

Date: 27 Nov 2018; Venue: AUT WG 901

Program: AVSS18 Challenge I and Workshop V
Time: 9.00 am - 5.10 pm
Date: 27 Nov 2018 (Tuesday)
Venue: AUT WG 908
Chair: Ming-Ching Chang (University at Albany, USA)

- Keynote Speech: Real time algorithm for extremely small object detection and its applications to ITS
  Jun-Wei Hsieh (National Taiwan Ocean University)

- CS I.1: Traffic Danger Recognition With Surveillance Cameras Without Training Data
  Lijun Yu (Peking University); Dawei Zhang (MIX Labs); Xiangqun Chen (Peking University); Alexander Hauptmann (Carnegie Mellon University)

- CS I.2: Comparison of Image Classification and Object Detection for Passenger Seat Belt Violation Detection Using NIR & RGB Surveillance Camera Images
  Alperen Elihos (HAVELSAN INC.), Bensu Alkan (HAVELSAN INC.), Burak Balci (HAVELSAN INC.), Yusuf Artan (HAVELSAN INC.)

- CS I.3: A Practical Person Monitoring System for City Security
  Takeharu Eda (NTT), Sanae Muramatsu (NTT), Keita Mikami (NTT), Shi Xu (NTT)

- CS I.4: Long Short Working Memory (LSWM) Integration with Polynomial Connectivity for Object Tracking in Wide Area Motion Imagery
  Evan Krieger (University of Dayton), Theus Aspiras (University of Dayton), Yakov Diskin (MZA), Vijayan Asari (University of Dayton)

- CS I.5: CADP: A Novel Dataset for CCTV Traffic Camera based Accident Analysis
  Ankit Parag Shah (Carnegie Mellon University); Jean Baptiste Lamare (Carnegie Mellon University); Tuan Nguyen Anh (University of Tokyo); Alexander Hauptmann (Carnegie Mellon University)

- CS I.6: Online and Real-Time Tracking with the GM-PHD Filter using Group Management and Relative Motion Analysis
  Young-min Song(Gwangju Institute of Science and Technology), Kwangjin Yoon (Gwangju Institute of Science and Technology), Young-Chul Yoon (Gwangju Institute of Science and Technology), Moongu Jeon (Gwangju Institute of Science and Technology)

- CS I.7: Extending IOU Based Multi-Object Tracking by Visual Information
  Erik Bochinski (TU Berlin), Tobias Senst(TU Berlin), Thomas Sikora (TU Berlin)

- Lunch

- CS I.8: Performance Enhancement of YOLOv3 by adding prediction layers with spatial pyramid pooling for vehicle detection
  Kwang-Ju Kim (Electronics and Telecommunications Research Institute (ETRI)), Yunsu Chung (Electronics and Telecommunications Research Institute (ETRI)), Doo-Hyun Choi (School of Electronics Engineering, Kyungpook National University)

- CS I.9: Integrating Multiple Inferences for Vehicle Detection by Focusing on Challenging Test Sets
  Jong Taek Lee (Electronics and Telecommunications Research Institute (ETRI)), Jang-Woon Baek (Electronics and Telecommunications Research Institute (ETRI)), Ki Young Moon (ETRI), Kil-Taek Lim (Electronics and Telecommunications Research Institute (ETRI))

- CS I.10: Ensemble of Two-Stage Regression Based Detectors for Accurate Vehicle Detection in Traffic Surveillance Data
  Lars Sommer (Fraunhofer IOSB, Karlsruhe, Germany), Oliver Acatay (Fraunhofer IOSB, Karlsruhe, Germany), Arne Schumann (Fraunhofer IOSB), Jürgen Beyer (Karlsruhe Institute of Technology - KIT)

- CS I.11: Multi-object Tracking Cascade with Multi-Step Data Association and Occlusion Handling
  Noor Al-Shakarji (University of Missouri Columbia); Filiz Bunyak (University of Missouri-Columbia); Guna Seetharaman (Naval Research Laboratory); Kannappan Palaniappan (University of Missouri)

4.2   Challenge II: Semantic Person Retrieval in Surveillance Using Soft Biometrics

In surveillance and security today it is a common goal to locate a subject of interest purely from a semantic description; think an offender description form handed into a law enforcement agency. To date, these tasks are primarily undertaken by operators on the ground either by manually searching a premises or by combing through hours of video footage. As such, the Australian Federal Police identified this area as a significant problem within law enforcement. To date, researchers have focused on person re-identification methodologies to solve this complex problem, however, in circumstances where pre-search subject enrollment images are not available, these techniques fail.

Semantic search is of primary interest as it does not require pre-search subject enrollment and instead searches video footage based on a textually supplied target query. The aim of this challenge is to attempt to solve this problem through two tasks, each of these tasks aims to locate a subject of interest based on a soft biometric signature.

Website: `semanticsbsearch.wordpress.com/`

Organizers:

- Michael Halstead (Queensland University of Technology, Australia)

- Simon Denman (Queensland University of Technology, Australia)

- Clinton Fookes (Queensland University of Technology, Australia)

- YingLi Tian (The City University of New York, USA)

- Mark S. NIxon (University of Southampton, UK)

Date: 27 Nov 2018; Venue: AUT WG 902

Program: Challenge II
Time: 9.00 am - 1.30 pm
Date: 27 Nov 2018 (Tuesday)
Venue: AUT WG 902
Chair: Mark S. Nixon (University of Southampton, UK)

- CS II. 1: Soft Biometric Retrieval Using Deep Multi-Task Network
  Gabriel Resende Goncalves, Antonio Carlos Nazare, Matheus Alves Diniz, Luiz Eduardo Coelho Lima, William Robson Schwartz

- CS II. 2: Feature Selection for Subject Ranking using Soft Biometric Queries
  Emil Barbuta Cipcigan, Mark Nixon

- Morning Tea

- CS II. 3: Transfer Learning Based Approach for Semantic Person Retrieval
  Takuya Yaguchi, Mark S. Nixon

- CS II. 4: Attribute-based Person Retrieval and Search in Video Sequences
  Arne Schumann, Andreas Specker, Jürgen Beyer

- CS II. 5: Person Retrieval in Surveillance Video using Height, Color and Gender
  Hiren Galiyawala, Kenil Shah, Vandit Gajjar, Mehul S. Raval

- CS II. 6: Challenge Summary and Overview.
  Michael Halstead (Queensland University of Technology, Australia), Simon Denman (Queensland University of Technology, Australia), Clinton Fookes (Queensland University of Technology, Australia), YingLi Tian (The City University of New York, USA), Mark S. NIxon (University of Southampton, UK),

- Discussions, conclusions, and results presentation

- Lunch

Workshops

The IEEE Conference on Advanced Video and Signal-Based Surveillance (AVSS) has developed a tradition of hosting surveillance-related workshops on the day preceding the main conference. Recent AVSS workshops included:

- Performance Evaluation of Tracking Systems (PETS)

- Resource Aware Sensor and surveillance NETworkS (RAWSNETS)

- Activity Monitoring by Multi-Camera Surveillance Systems (AMMCSS)

- Activity Monitoring by Multiple Distributed Sensing (AMMDS)

- Workshop on Multimedia Systems for Surveillance (MMSS)

- Vehicle Retrieval in Surveillance (VRS)

- Low Resolution Face Analysis (LRFA)

This tradition will continue at AVSS 2018, and workshops will be held on 27 November 2018 prior to the start of the technical program of the main AVSS conference. We welcome workshop proposals in new and emerging research areas of visual and signal-based surveillance. AVSS18 workshops include:

- **Workshop I**: Workshop on Smart Image Sensor Systems

- **Workshop II**: Human Behavior Analysis based on Video Analytics and Deep Learning

- **Workshop III**: International Workshop on Multi-source Surveillance for Public Safety and Healthcare

- **Workshop IV**: International Workshop on the Security of Video Surveillance Systems (SVSS)

- **Workshop V**: Traffic and Street Surveillance for Safety and Security (T4S)

- **Workshop VI**: International Workshop on Digital Crime and Forensics (IWDCF)

Date: 27 Nov 2018; Venue: AUT WG Level 9

4.3 Workshop I: Smart Image Sensor Systems

Smart image sensor systems that integrate sensing, computation, and memory are the next generation of smart cameras. Traditional smart cameras combine traditional sensors and embedded computing systems-on-chips to perform in-camera analysis. Smart sensor systems may combine analog and digital computation with the sensor, resulting in significantly lower latency computations as well as smaller SWaP (size, weight, and power). The novel architectures presented by smart image sensors call for a new round of algorithm/architecture co-design to leverage the capabilities of these systems. Potential topics include:

- Analog and mixed-signal on-sensor computation

- Digital on-sensor computation

- 3D VLSI architectures for smart sensors

- Computer vision applications (tracking, target identification, etc.) adapted to a chosen smart sensor platform

- Algorithm-architecture co-design for smart sensor systems

- Simulation studies of smart sensor systems

- Applications and use cases for smart sensor systems

- Distributed networks of smart sensors

- Tutorials on smart image sensors

Organizers:

- Marilyn Wolf (Georgia Institute of Technology)

- Ricardo Carmona Galan (IMSE-CNM)

- Anthony Griffin (AUT)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 903

Program: AVSS18 Workshop I
Time: 1.30 - 5.10 pm
Date: 28 Nov 2018 (Tuesday)
Venue: AUT WG 903
Chair: Anthony Griffin (AUT)

- **Keynote Speech**: Francois Bremond (INRIA,France): Video Analytics

- WS I. 1: Detection of Fairy Circles in UAV Images Using Deep Learning
  Yuhong Zu(AUT), Zahra Moayed(AUT), Barbara Bollard-Breen(AUT), Ashray Doshi(AUT),
  Jean Baptiste Ramond(AUT), Reinhard Klette(AUT)

- WS I. 2: Computer vision based pose detection of agricultural implements without a priori
  knowledge of their geometry and visual appearance
  Michael Erz

- Coffee Break: AUT WG 201

- WS I. 3: Region of interest generation for smart cameras with 3D stacks
  Evan Gebhardt, Marilyn Wolf (Georgia Tech)

- WS I. 4: Deep Learning Based Action Evaluation for Sensor Data
  Chen-Kuo Kiang

4.4   Workshop II: Human Behavior Analysis Based on Video Analytics and Deep Learning

Summary: Human behavior recognition (HBR) is a key area in video analysis and machine learning application. Close circuit cameras are now widely used to increase security in many high alert areas such as airport, bus stop and railway station. There are various methods for analyzing human behavior such as sensor based activity recognition, gait analysis based activity recognition. Since video is a low cost and easy to use device for monitoring activities, video based human behavior analysis is widely used. Video analytics have application in patientâĂŹs behavior analysis also. Deep learning allows models that are composed of multiple processing layers to learn features of data with multiple levels of abstraction. Now-a-days deep learning techniques such as Convolutional Neural Network, Recurrent Neural Network have become popular for human activity recognition. The workshop aims at bringing computer vision and machine learning experts together for presenting their novel ideas in HBR using video processing and deep learning approach. This will give a platform to researchers from both fields to discuss their original ideas in HBR, solution of existing HBR problems and look for future scope in designing more robust model for human behavior analysis system. Scope and topics of interest include, but are not limited to:

- Human behavior analysis

- Human activity recognition

- Human/ Object tracking and classification

- Crowd behavior analysis

- Deep learning techniques application in human activity recognition

- Video analytics for patient behavior analysis

Organizers:

- Maheshkumar H Kolekar (Inidian Institute of Technology Patna, India)

- R. Balasubramanian (Indian Institute of Technology Roorkee, India)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 904

Program: AVSS18 Workshop II
Time: 9.00 am - 12.30 pm
Date: 27 Nov 2018 (Tuesday)
Venue: AUT WG 903A
Chair: Maheshkumar H Kolekar (Indian Institute of Technology Patna, India)

- **Keynote Speech**: Human activity recognition to enhance security
  Maheshkumar H Kolekar (IIT Patna, India)

- WS II.1: Deep Learning Approach for Surveillance Analytics and Integration with Virtual Assistant
  Mohanraj Vengadachalam, Ramachandra Guda, Kameshwar Rao J.V and Rajat Meena

- WS II.2: Analysis of Motion Patterns for Pain Estimation of Horses
  Ralf Reulke, Dominik Rueb, Niklas Deckers, Dirk Barnewitz, Anne Wieckert and Kathrin Kienapfel

- Coffee Break: AUT WG 201

- Keynote Speech
  R. Balasubramanian (IIT, Roorkee)

- WS II.3: UNICITY: A depth maps database for people detection in security airlocks
  Joel Dumoulin, Olivier Canevet, Michael Villamizar, Hugo Nunes, Elena Mugellini, Fabrice Moscheni and Jean-Marc Odobez

- WS II.4: Hierarchical spatial object detection for ATM vandalism surveillance
  Junyeop Lee, Chuljin Cho, David K. Han and Hanseok Ko

- WS II.5: Sensor Data Based Human Activity Recognition Using Deep Neural Networks
  Deepanway Ghosal and Maheshkumar H. Kolekar

- WS II.6: Centre-of-mass-based gait recognition for person identification
  Rajib Ghosh, Nirbhay Kumar Singh, Vishal Awanindra, Murli Mohan and Prabhat Kumar

4.5   Workshop III: Multi-source Surveillance for Public Safety and Healthcare

With rapid growth in sensing and communication technology, we have various new sources of information that can complement video to achieve robust and reliable surveillance, e.g. heat detector, smoke detector, infrared/thermal sensor, motion sensor, metal detectors, GPS, weather sensors, and various other sensors found on current smartphones. Additionally, online social networks and real-time news portals provide valuable information about individuals and surrounding environment. We can assimilate all these data from different sources to make accurate and reliable situation assessment using artificial intelligence (AI) and Deep learning (DL) methods. This workshop aims to bring together researchers that are specifically working on applying advanced learning techniques to exploit multi-source information for public safety and healthcare. The workshop aims to build a common platform for synergizing research efforts and develop innovative methods population health and safety. We solicit original and unpublished research papers that analyse multiple source for safety and healthcare applications. Topics for the workshop include, but are not limited to:

- Multi-source data analysis for security threat and crime detection

- Multi-source data analysis for forensics

- Multi-source data analysis for abnormal situation monitoring

- Advanced learning techniques for multi-source data analysis for safety and health

- Multi-source data analysis for population health management

- Multi-source data analysis for disease detection, diagnosis and treatment plans

- Online social network analysis for safety and health monitoring

- Multi-source data analysis for remote or tele-health management

Researchers working on multimodal analysis of single source (such as image, audio, text) for public safety and healthcare are also encouraged to submit their original work. After the workshop, we intend to submit a special issue proposal in a reputable journal for extended papers of the workshop on the same topic.

Organizers:

- Mukesh Saini (Indian Institute of Technology Ropar, India)

- Warikanath Mahapatra (IBM Research Australia)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 903A

4.6   Workshop IV: Security of Video Surveillance Systems (SVSS)

Video surveillance systems have become an important part of our lives, introducing new capabilities to improve civilian protection, reduce crime, increase the security of military and critical infrastructures, etc. As the trend of the Internet of Things (IoT) has evolved, video and signaling surveillance systems have begun to integrate new, advanced, and intelligent functionalities, such as real-time video stream analysis and detection using advanced machine learning techniques, streaming data to servers deployed in the cloud to provide access to the content by multiple devices from any location, and more. However, the integration of new functionalities into these systems exposes them to new risks that need to be considered and mitigated. For example, we cannot assume that the transmitted and visualized video is protected and reflects the true state of the monitored environment/objects, since an attacker can monitor and manipulate the data streams of such systems in real-time (e.g. reply attack) from a remote location. Some of the security problems resulting from the intersection of the digital and physical realms, introduce cyber security challenges which are unique to video and signaling surveillance systems and may cost human lives. It is therefore critical to address the emerging cyber security related problems, which can affect (compromise) various components of such surveillance systems. This workshop aims to bring together the latest cyber security research pertaining to all aspects of video surveillance systems. We are soliciting contributions on (but not limited to) the following topics:

- Secured architecture for video surveillance systems

- Intrusion detection in video surveillance systems

- Inferring information from encrypted video streams

- Cyber attacks on video surveillance systems

- Cyber attacks from video surveillance systems

- Adversarial AI aimed at video streams and surveillance systems

- Surveillance system honeypots

- Security measures for surveillance systems

Researchers working on multimodal analysis of single source (such as image, audio, text) for public safety and healthcare are also encouraged to submit their original work. After the workshop, we intend to submit a special issue proposal in a reputable journal for extended papers of the workshop on the same topic.

Organizers:

- Yuval Elovici (Ben-Gurion University of the Negev, Israel)

- Asaf Shabtai (Ben-Gurion University of the Negev, Israel)

- Oleg Brodt (Ben-Gurion University, Israel)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 903A

4.7   Workshop V: Traffic and Street Surveillance for Safety and Security (T4S)

In the last couple of decades, there has been a tremendous increase in demand for smart systems capable of monitoring street security and traffic states. Big city centers are subjected to a growing amount of people and vehicle mobility, making control and security management increasingly difficult. The contribution of automatic systems capable to centralize street control and automatically detect possible problems (accidents, traffic jam, brawls, etc.) in order to elicit and support the intervention of law enforcement agencies or medical staff is needed. The proposed workshop is organized jointly with the Challenge on Advanced Traffic Monitoring, and it is addressed to researchers interested in contributing on the general topic of security on mobility and street applications. Research papers are solicited in, but not limited to, the follow areas and topics:

- Vehicle detection and tracking

- Vehicle type classification

- Pedestrian detection and tracking

- Vehicle/pedestrian behavior

- Traffic jam detection

- Car/pedestrian accidents

- Activity monitoring systems

- Scene understanding

- Visual attention and visual saliency

- Matching vehicles across cameras

- Smart environments

- Safety and security

- Technology for cognition

- Navigation systems

- Sensory substitution

- Datasets and evaluation procedures

Organizers:

- Marco Del Coco (Institute of Applied Sciences and Intelligent Systems (CNR), Italy)

- Siwei Lyu (University at Albany, USA)

- Pierluigi Carcagni (Institute of Applied Sciences and Intelligent Systems (CNR), Italy)

- Ming-Ching Chang (University at Albany, USA)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 908

4.8   Workshop VI: Digital Crime and Forensics (IWDCF)

Digital forensics have gradually become a very active research area in the field of information security in the last two decades. In recent years, more and more subfields in digital forensics such as the network forensics, content forensics, source tracing, etc, were greatly developed. However, while the advance of digital technologies boosts the development of forensic techniques, it also helps criminals and law violators. Particularly, anti-forensic technologies are also widely studied nowadays. Therefore, a series of problems still exist in various areas including the mathematical modeling, computational intelligence, accuracy improvement, new method development, and performance evaluations, etc. The focus of this workshop is on calling up the research groups to remove the obstacles. The topics of this workshop cover but not limited to:

- Computational approaches to digital crime preventions

- Crime scene imaging

- Cryptologic techniques and tools for crime investigation

- Data carving and recovery

- Digital evidence

- Digital techniques for crime investigations

- Identity theft and biometrics

- Information warfare

- Machine learning, data mining, and information retrieval for crime prevention and forensics Policy, standards, protocols, accreditation, certification, and ethical issues related to digital crime and forensics

- Malicious codes detection Network intrusion detection

- Network attack investigation and forensics

- Network attack source tracing

- Small digital device forensics (cell phones, smartphone, PDAs, audio/video devices, cameras, flash drives, gaming devices, GPS devices, etc.)

- Multimedia content forensics

- Techniques for content tempering

- Anti-forensic technology

- Steganography and steganalysis

- Network covert communication and detection

- Analytical methodologies against terrorism

- Watermarking for digital forensics

- Digital rights Management

- Intelligent surveillance

Organizers:

- Feng Liu (The University of Chinese Academy of Sciences, China)

- Fei Peng (Hunan University, China)

Date: 27 Nov 2018 (Tuesday); Venue: AUT WG 907

Program: AVSS18 Workshop VI
Time: 8.50 am - 5.10 pm
Date: 27 Nov 2018 (Tuesday)
Venue: AUT WG 907
Chair: Yasen Aizezi (Xinjiang Police College, China)

- **Keynote Speech**: Professor Liping Ding (Chinese Academy of Sciences, China)

- WS VI.1: Fourier Mellin transform and fractal coding for secure and robust fingerprint image hashing
  Sani Mohammed Abdullahi (Southwest Jiaotong University); Hongxia Wang (Southwest Jiaotong University)

- WS VI.2: Research on Image Recognition Method Based on Deep Learning Algorithm
  Yasen Aizezi (Xinjiang Police College); Anniwaer Jiamali (Xinjiang Police College); Ruxianguli Abudurexiti (Xinjiang Police College); Xuehua Liu (Chinese Academy of Sciences & University of Chinese Academy of Sciences, Beijing); Jin Du (YunNan Police College); Liping Ding (Guangzhou & Chinese Academy of Sciences & Institute of Software, Chinese Academy of Sciences)

- WS VI.3: Pedestrian Recognition, Localization, and Detection Using Deep Learning
  Jia Lu(Auckland University of Technology); Wei Qi Yan(Auckland University of Technology)

- WS VI.4: Detection and Recognition for Multi-flame based on Deep Learning Approach
  Chen Xin (Auckland University of Technology) Wei Qi Yan(Auckland University of Technology)

- WS VI.5: Currency Detection and Recognition Based on Deep Learning
  Qian Zhang(Auckland University of Technology); Wei Qi Yan(Auckland University of Technology)

- Lunch

- WS VI.6: Web attack forensics based on network traffic behavior characteristics and URLs
  Guozi Sun (Nanjing University of Posts and Telecommunications); Lei Zhu (Nanjing University of Posts and Telecommunications); Huakang Li (Nanjing University of Posts and Telecommunications); Wenjun Li (Beijing Public Security Bureau)

- WS VI.7: DDoS Attacks and Flash Event Detection Based on Flow Characteristics in SDN
  Wenti Jiang (Nanjing University of Posts and Telecommunications); Yu Gu (Nanjing University of Posts and Telecommunications); Danni Ren (Nanjing University of Posts and Telecommunications); Huakang Li (Nanjing University of Posts and Telecommunications); Guozi Sun (Nanjing University of Posts and Telecommunications)

- WS VI.8: Botnet Homogeneous Discrimination Based on Approximation Algorithm of Communication Characteristic Curve
  Lichao Zhai(Shanxi University of Finance and Economics)

- Coffee Break

- WS VI.9: The Dynamic Data Integrity Verification and Recovery Scheme based on MHT
  Yasen Aizezi (Xinjiang Police College); Yuhua Feng (Xinjiang Police College); Li Yu (Xinjiang Police College); Guozi Sun (Nanjing University of Posts and Telecommunications)

- WS VI.10: Comparative Evaluations of Privacy on Digital Images
  Xue Zhang (Auckland University of Technology); Wei Qi Yan (Auckland University of Technology)

4.9   Tutorial: Deep Learning and Multiple Drone Vision

Speaker: Ioannis Pitas (Aristotle University of Thessaloniki, Greece)

Computer vision pays pivotal role both for drone cinematographic shooting and for drone safety. The aim of drone cinematography is to develop innovative intelligent single- and multiple-drone platforms for media production. Such systems should be able to cover outdoor events (e.g. sports) that are typically distributed over large expanses, ranging, for example, from a stadium to an entire city. In most cases, drone shooting has a target, e.g. cyclists, or boats in case of sports events. Deep learning is currently the principal approach in various computer vision tasks, notably object (shooting target, crowd, landing site) detection. The drone or drone team, to be managed by the production director and his/her production crew, shall have: a) increased multiple drone decisional autonomy for tracking/following the target and allowing event coverage in the time span of around one hour in an outdoor environment and b) improved multiple drone robustness and safety mechanisms (e.g., communication robustness/safety, embedded flight regulation compliance, enhanced crowd avoidance and emergency landing mechanisms), enabling it to carry out its mission against errors or crew inaction and to handle emergencies. Such robustness is particularly important, as the drones will operate close to crowds and/or may face environmental hazards (e.g., wind). Therefore, it must be contextually aware and adaptive, towards maximizing shooting creativity and productivity, while minimizing production costs. Drone vision and machine learning play a very important role towards this end, covering the following topics: a) drone localization, b) drone visual analysis for target/obstacle/crowd/point of interest detection, c) 2D/3D target tracking, d) privacy protection technologies in drones (e.g. face de-identification).

The tutorial will offer an overview of all the above plus other related topics, stressing the algorithmic aspects, such as: a) drone imaging b) drone target localization and world mapping c) target detection and tracking, d) privacy protection in drones.

Short Biography: Professor Ioannis Pitas (IEEE fellow, IEEE Distinguished Lecturer, EURASIP fellow) received the Diploma and PhD degree in Electrical Engineering, both from the Aristotle University of Thessaloniki, Greece. Since 1994, he has been a Professor at the Department of Informatics of the same University. He served as a Visiting Professor at several Universities.

His current interests are in the areas of image/video processing, intelligent digital media, machine learning, human centered interfaces, affective computing, computer vision, 3D imaging and biomedical imaging. He has published over 860 papers, contributed in 44 books in his areas of interest and edited or (co-)authored another 11 books. He has also been member of the program committee of many scientific conferences and workshops. In the past he served as Associate Editor or co-Editor of 9 international journals and General or Technical Chair of 4 international conferences. He participated in 69 R&D projects, primarily funded by the European Union and is/was principal investigator/researcher in 41 such projects. He has 28000+ citations (Google Scholar) to his work and h-index 81+ (Google Scholar).

Prof. Pitas leads the big European R&D project MULTIDRONE. He is also chair of the Autonomous Systems initiative.

Date: 27 Nov 2018; Venue: AUT WG 906

Program: AVSS18 Tutorials
Time: 1.30 am - 5.10 pm
Date: 27 Nov 2018 (Tuesday)
Venue: AUT WG 906
Lecturer: Ioannis Pitas (Aristotle University of Thessaloniki, Greece)
Chair: Edmund Lai (Auckland University of Technology)

- TS I: Introduction to multiple drone imaging
  Time: 13:30-14:15
  Abstract: This lecture will provide the general context for this new and emerging topic, presenting the aims of drone vision, the challenges (especially from an image/video analysis and computer vision point of view), the important issues to be tackled, the limitations imposed by drone hardware, regulations and safety considerations etc.

  The multiple drone platform will be also detailed, beginning with platform hardware overview, issues and requirements and proceeding by discussing safety and privacy protection issues. Finally, platform integration will be the closing topic of the lecture, elaborating on drone mission planning, object detection and tracking, target pose estimation, privacy protection, ethical and regulatory issues, potential landing site detection, crowd detection, semantic map annotation and simulations.

- TS II: Mapping and localization
  Time: 14:15-15:00
  Abstract: The lecture includes the essential knowledge about how we obtain/get 2D and/or 3D maps that robots/drones need, taking measurements that allow them to perceive their environment with appropriate sensors. Semantic mapping includes how to add semantic annotations to the maps such as POIs, roads and landing sites. The section Localization is exploited to find the 3D drone or target location based on sensors using specifically Simultaneous mapping and localization (SLAM). Finally, the Fusion in drone localization section describes the improving accuracy on localization and mapping in Multidrone to exploit the synergies between different sensors.

- 15.00 - 15.30 Coffee Break, AUT WG 201.

- TS III: Deep learning for target detection
  Time: 15:30-16:15
  Abstract: Target detection using deep neural networks, Detection as search and classification task, Detection as classification and regression task, Modern architectures for target detection, RCNN, Faster RCNN, YOLO, SSD, lightweight architectures, Data augmentation, Deployment, Evaluation and benchmarking.

  Utilizing Machine Learning techniques can assist in detecting objects of importance and subsequently tracking them. Hence, Visual Object Detection can greatly aid the task of video shooting using drones. Drones with Graphics Processing Units (GPUs) in particular can be aided by Deep Learning techniques, as GPUs routinely speed up common operations such as matrix multiplications. Recently, Convolutional Neural Networks (CNNs) have been used for the task of object detection with great results. However, using such models on drones for real-time face detection is prohibited by the hardware constraints that drones impose. We examine various architectures and settings to facilitate the use of CNN-based object detectors on a drone with limited computational capabilities.

- TS III: 2D Target tracking and 3D target localization
  Time: 16:15-17:10
  Abstract: Target tracking is a crucial component of many computer vision systems. Many approaches regarding face/object detection and tracking in videos have been proposed. In this lecture, video tracking methods using correlation filters or convolutional neural networks are presented, focusing on video trackers that are capable of achieving real time performance for long-term tracking on a UAV platform.

4.10   Keynote Speech I

Title: Spiking Neural Networks, Deep Learning, and Brain-inspired Artificial Intelligence
Date: 28 Nov 2018 (Wednesday)
Time: 9.00-10.00 am
Venue: AUT WA 224
Speaker: Nikola Kasabov (Auckland University of Technology, New Zealand)
Chair: Reinhard Klette (Auckland University of Technology)

Abstract: Brain-inspired AI (BI-AI) is the contemporary phase in the AI development that is concerned with the design and implementation of highly intelligent machines that utilise information processing principles from the human brain, along with their applications. Spiking neural networks (SNN) and deep learning algorithms in SNN are brain-inspired techniques that make it possible for a new generation of AI systems to be developed - the brain-inspired AI (BI-AI).

This presentation has two parts. The first part covers generic methodological aspects of AI and neural networks, including: Adaptive learning of evolving processes in space and time; Data, Information and Knowledge; The human brain as a deep learning system; Classical methods of ANN; Methods of SNN; Deep learning in brain-inspired SNN architectures; Evolutionary and quantum-inspired optimisation of SNN systems; Neuromorphic development software and hardware platforms for SNN.

The second part presents specific methods, systems and applications based on deep learning in SNN and BI-AI for various problems and data, including: signal processing; audio/visual data for fast moving object recognition; multisensory predictive modelling of streaming data; cybersecurity. It concludes with discussions about the future of AI. A development software system NeuCube and application systems can be found on: http://www.kedri.aut.ac.nz/neucube/.

Short Biography: Professor Nikola Kasabov is a Fellow of IEEE, Fellow of the Royal Society of New Zealand, DVF of the Royal Academy of Engineering, UK and the Scottish Computer Association. He is the Director of the Knowledge Engineering and Discovery Research Institute (KEDRI), Auckland and Professor at the School of Engineering, Computing and Mathematical Sciences at Auckland University of Technology. Kasabov is President-Elect of the Asia Pacific Neural Network Society (APNNS) to serve as the President in 2019. He is a Past President of the International Neural Network Society (INNS) and APNNS. He is a member of several technical committees of IEEE Computational Intelligence Society and a Distinguished Lecturer of the IEEE CIS (2012-2014). He is a Co-Editor-in-Chief of the Springer journal Evolving Systems and serves as Associate Editor of Neural Networks, IEEE TrNN, -Tr CDS, -TrFS, Information Science, Applied Soft Computing and other journals. Kasabov holds MSc and PhD from the TU Sofia, Bulgaria. His main research interests are in the areas of neural networks, intelligent information systems, soft computing, bioinformatics, neuroinformatics. He has published more than 600 publications that include 15 books, 220 journal papers, 28 patents and numerous chapters and conference papers.

He has extensive academic experience at various academic and research organisations in Europe and Asia, including: TU Sofia Bulgaria; University of Essex UK; University of Otago, NZ, Advisor Professor at the Shanghai Jiao Tong University, Visiting Professor at ETH/University of Zurich and Robert Gordon University in the UK. Prof. Kasabov has received a number of awards, among them: the APNNA 'Outstanding Achievements Award'; the INNS Gabor Award for 'Outstanding contributions to engineering applications of neural networks'; the EU Marie Curie Fellowship; the Bayer Science Innovation Award; the APNNA Excellent Service Award; the RSNZ Science and

Technology Medal; the 2015 AUT Medal for outstanding academic contribution; Honorable Member of the Bulgarian Academic Society for Computer Science and IT, and others. He is an Honorary Citizen of Pavlikeni and a Mentor of the "Bacho Kiro" school in the town. He has supervised to completion 46 PhD students. More information of Prof. Kasabov can be found on the KEDRI web site.

4.11   Keynote Speech II

Title: A Navigational Approach to Health
Date: 28 Nov 2018 (Wednesday)
Time: 1.30 pm-2.30 pm
Venue: AUT WA 224
Speaker: Ramesh Jain (University of California-Irvine, USA)
Chair: Mohan Kankanhalli (National University of Singapore, Singapore)

Abstract: What if an app could guide you to better health, similar to how GPS navigation directs you to your desired destination? Advances in sensors, mobile computing, artificial intelligence, data management, cloud computing, biology, and medicine allow approaching human health from a novel navigational perspective. Current episodic practice of healthcare is based on Measure-Estimate-Guide-Influence (MEGI) cycle that is initiated usually by a sick person. By navigating through health states starting from the current state to desired goal state, it is possible to perpetually guide a person using well established cybernetic principles combined with emerging technology that has demonstrated its success in many other areas. This converts current episodic approaches to so-called healthcare, which really is a sickcare, to a navigation through health state-space to guide and move to desirable states. We discuss this navigational approach and present personal health navigator that will help people accomplish this.

Short Biography: Professor Ramesh Jain is a Donald Bren Professor in Information & Computer Sciences at the University of California, Irvine (UCI). His current research passion is in addressing health issues using cybernetic principles, building on the progress in sensors, mobile, processing, and storage technologies. He is the founding director of the Institute for Future Health at UCI. Earlier he served at Georgia Tech, the University of California at San Diego, the University of Michigan, Ann Arbor, Wayne State University, and the Indian Institute of Technology, Kharagpur, India. He is a Fellow of AAAS, ACM, IEEE, AAAI, IAPR, and SPIE.

Professor Ramesh Jain co-founded several companies, managed them in their initial stages, and then turned them over to professional management. He enjoys new challenges and likes to use technology to solve them. He is participating in addressing the biggest challenge for us all: how to live long in good health.

4.12   Keynote Speech III

Date: 29 Nov 2018 (Thursday)
Time: 9.00-10.00 am
Venue: AUT WA 224
Speaker: Professor Edward Delp (Purdue University, USA)
Chair: Mohan Kankanhalli (National University of Singapore, Singapore)

Abstract: In this talk I will describe recent work in image-based plant phenotyping. Estimating the properties of plants (i.e., phenotyping) is critical to predict its viability and biomass. I will describe work in estimating phenotypic traits such as plant locations, number of plants per plot, Leaf Area Index, canopy cover, leaf length and width, and the number of leaves per plant. I discuss field-based image acquisition using UAVs and ground-based sensing. I will discuss how this area have many important problems that can be addressed by the computer vision and surveillance communities. The goal is to develop a set of tools to precisely and quickly phenotype hundreds of thousands of plants on a daily basis.

Short Biography:

Edward J. Delp is the Charles William Harrison Distinguished Professor of Electrical and Computer Engineering and Professor of Biomedical Engineering at Purdue University. His research interests include image and video processing, image analysis, computer vision, image and video compression, multimedia security, medical imaging, multimedia systems, communication and information theory. Dr. Delp is a Fellow of the IEEE, a Fellow of the SPIE, a Fellow of the Society for Imaging Science and Technology (IST), and a Fellow of the American Institute of Medical and Biological Engineering. In 2004 Dr. Delp received the Technical Achievement Award from the IEEE Signal Processing Society for his work in image and video compression and multimedia security. In 2008 he received the Society Award from IEEE Signal Processing Society (SPS). In 2016 Dr. Delp received the Purdue College of Engineering Mentoring Award for his work in mentoring junior faculty and women graduate students.

4.13   Keynote Speech IV

Title: Evolutionary Deep Learning and Applications to Image Recognition
Date: 30 Nov 2018 (Friday)
Time: 9.00-10.00 am
Venue: AUT WA 224
Speaker: Mengjie Zhang (Victoria University of Wellington, New Zealand)
Chair: Reinhard Klette (Auckland University of Technology, New Zealand)

Abstract: Image classification and recognition problems occur in our everyday life. Recognising faces in digital images and diagnosing medical conditions from X-Ray images are just two examples of the many important tasks for which we need computer based image classification systems. Since the 1980s, many image analysis algorithms have been developed. Among those algorithms, deep learning particularly deep convolutional neural networks have received very good success and attracted attentions to industry people and researchers in computer vision and image processing, neural networks, and machine learning. However, there are at least three major limitations in deep convolutional neural networks: (1) the learning architecture including the number of layers, the number of feature maps in each layer and the number of nodes in each feature map are still very much determined manually via "trial and error", which requires a large amount of hand-crafting/trial time and good domain knowledge. However, such experts are hard to find in many cases, or using such expertise is too expensive. (2) Almost all the current deep learning algorithms need a large number of examples/instances (e.g. AlphaGo used over 30 million instances) that many problems do not have. (3) Those algorithms require a huge computational cost that big companies such as Google, Baidu, and Microsoft can cope well but most universities and research institutions cannot.

To address these limitations, evolutionary computation techniques start playing a significant role for automatically determining deep structures, transfer functions and parameters to tackle image classification tasks, and have great potential to advance the developments of deep structures and algorithms. This talk will provide an extended view of deep learning, overview the state-of-the-art work in evolutionary deep learning using GAs/PSO/DE, and discuss some recent developments using Genetic Programming (GP) to automatically evolving deep structures and feature construction for image recognition with a highlight of the interpretation capability and visualisation of constructed features. Finally, recent work and ideas on evolutionary deep transfer learning will be discussed.

Short Biography: Mengjie Zhang is currently Professor of Computer Science at Victoria University of Wellington, where he heads the interdisciplinary Evolutionary Computation Research Group with over 12 staff members, seven postdocs and over 25 PhD students. He is a member of the University Academic Board, a member of the University Postgraduate Scholarships Committee, a member of the Faculty of Graduate Research Board at the University, Associate Dean (Research and Innovation) for Faculty of Engineering, and Chair of the Research Committee for the School of Engineering and Computer Science. His research is mainly focused on evolutionary computation, particularly genetic programming, particle swarm optimisation and learning classifier systems with application areas of computer vision and image processing, multi-objective optimisation, and feature selection and dimension reduction for classification with high dimensions, transfer learning, classification with missing data, and scheduling and combinatorial optimisation. Prof Zhang has published over 500 research papers in fully refereed international journals and conferences in these areas. He has been supervising over 100 research thesis and project students including

over 30 PhD students.

He has been serving as an associated editor or editorial board member for ten international journals including IEEE Transactions on Evolutionary Computation, IEEE Transactions on Cybernetics, Evolutionary Computation Journal (MIT Press), IEEE Transactions Emergent Topics in CI, Genetic Programming and Evolvable Machines (Springer), Applied Soft Computing, and Engineering Applications of Artificial Intelligence, and as a reviewer of over 30 international journals. He has been a major chair for over ten international conferences including IEEE CEC, GECCO, EvoStar and SEAL.

He has also been serving as a steering committee member and a program committee member for over 80 international conferences including all major conferences in evolutionary computation. Since 2007, he has been listed as one of the top five world genetic programming researchers by the GP bibliography. He will chair and host IEEE CEC 2019 Wellington, the Capital City of New Zealand.

Professor Zhang is a Fellow of Royal Society of New Zealand. He is currently chairing the IEEE CIS Intelligent Systems and Applications Technical Committee. He is the immediate Past Chair for the Emergent Technologies Technical Committee and the IEEE CIS Evolutionary Computation Technical Committee, and a member of the IEEE CIS Award Committee. He is also a vice-chair of the IEEE CIS Task Force on Evolutionary Feature Selection and Construction, a vice-chair of the Task Force on Evolutionary Computer Vision and Image Processing, and the founding chair of the IEEE Computational Intelligence Chapter in New Zealand.

4.14   Oral Session I: Event Recognition

Time: 10.00 am - 10.30 am
Date: 28 Nov 2018 (Wednesday)
Venue: AUT WA 224
Chair: Baoxin Li (Arizona State University, USA)

- **OS I.1**: Simultaneous event localization and recognition for surveillance video
  Yikang Li (Arizona State University); Tianshu Yu (Arizona State University); Baoxin Li (Arizona State University)

- **OS I.2**: Optical Flow Dataset and Benchmark for Visual Crowd Analysis
  Gregory Schroder (Technische Universität Berlin); Tobias Senst (TU Berlin); Erik Bochinski (TU Berlin); Thomas Sikora (TU Berlin)

- **OS I.3**: Fast but Not Deep: Efficient Crowd Abnormality Detection with Local Binary Tracklets
  Mahdyar Ravanbakhsh (University of Genova); Hossein Mousavi (Polytechnique Montreal); Moin Nabi (SAP); Lucio Marcenaro (Universita degli Studi di Genoa, Genoa); Carlo Regazzoni (Universita degli Studi di Genoa, Genoa)

4.15   Oral Session II: Object Detection, Recognition and Tracking

Time: 11.00 pm - 12.00 pm
Date: 28 Nov 2018 (Wednesday)
Venue: AUT WA 224
Chair: Evan Gebhardt (The Georgia Institute of Technology)

- **OS II.1**: Wardrobe Model for Long Term Re-identification and Appearance Prediction
  Kyung Won Lee (Suny at buffalo); Nishant Sankaran (University at Buffalo); Srirangaraj Setlur (University at Buffalo, SUNY); Nils Napp (University at Buffalo); Venu Govindaraju (University at Buffalo, SUNY)

- **OS II.2**: Combining Local and Global Models for Robust Re-detection in Generic Object Tracking
  Goutam Bhat (Linköping University); Martin Danelljan (Linköping University); Fahad Shahbaz Khan (Linköping University); Michael Felsberg (Linköping University)

- **OS II.3**: Cascade-Dispatched Classifier Ensemble and Regressor for Pedestrian Detection
  Remi Trichet (DCU); Francois Bremond (INRIA Sophia Antipolis, France)

- **OS II.4**: CAMEL Dataset for Visual and Thermal Infrared Multiple Object Detection and Tracking
  Evan T Gebhardt (The Georgia Institute of Technology)

4.16   Oral Session III: Identification

Time: 11.00 am - 12.00 pm
Date: 29 Nov 2018 (Thursday)
Venue: AUT WA 224
Chair: Shishir Shah (University of Houston)

- **OS III.1**: A Generalized Optimization Framework for Score Aggregation in Person Re-identification Systems
  Arko Barman (University of Houston); Shishir Shah (University of Houston)

- **OS III.2**: Fast Simultaneous People Detection and Re-identification in a Single Shot Network
  Wiebe Van Ranst (KU Leuven); Toon Goedeme (KU Leuven - EAVISE)

- **OS III.3**: An Intent-Based Automated Traffic Light for Pedestrians
  Christian Ertler (Graz University of Technology); Horst Possegger (Graz University of Technology); Michael Opitz (Graz University of Technology); Horst Bischof (Graz University of Technology)

4.17   Oral Session IV: Modeling

Time: 1.30 - 3.00 pm
Date: 29 Nov 2018 (Thursday)
Venue: AUT WA 224
Chair: Jun-Wei Hsieh (National Taiwan Ocean University)

- **OS IV.1**: Efficient Camera Tampering Detection with Automatic Parameter Calibration
  Alexey Sidnev (Intel); Marina Barinova (Intel); Sergei Nosov (Intel)

- **OS IV.2**: Image fusion and influence function for performance improvement of ATM vandalism action recognition
  Hanseok Ko (Korea University); Yun Jeongseop (Korea university)

- **OS IV.3**: Multispectral Matching using Conditional Generative Appearance Modeling
  Christoph Bodensteiner (Fraunhofer IOSB); Sebastian W Bullinger (Fraunhofer IOSB); Michael Arens (Fraunhofer IOSB)

- **OS IV.4**: Real-Time Vehicle Re-Identification System Using Symmelets and HOMs
  Jun-Wei Hsieh (National Taiwan Ocean University)

4.18   Oral Session V: Scene Understanding

Time: 11.00 am - 12.00 pm
Date: 30 Nov 2018 (Friday)
Venue: AUT WA 224
Chair: Manoranjan Mohanty (University of Auckland, New Zealand)

- **OS V.1**: GPU-accelerated Height Map Estimation with Local Geometry Priors in Large Scenes
  Alireza Rezaei (Paris Sud University); Nicola Pellicano (Paris Sud University); Emanuel Aldea (University Paris Sud)

- **OS V.2**: Online Multi-Object Tracking with Historical Appearance Matching and Scene Adaptive Detection Filtering
  Young-Chul Yoon (Gwangju Institute of Science and Technology); Abhijeet Boragule (Gwangju Institute of Science and Technology); Young-min Song (Gwangju Institute of Science and Technology); Kwangjin Yoon (Gwangju Institute of Science and Technology); Moongu Jeon (Gwangju Institute of Science and Technology)

- **OS V.3**: Scene Adaptation for Semantic Segmentation using Adversarial Learning
  Daniele Di Mauro (University of Catania); Antonino Furnari (University of Catania); Giuseppe Patane (Park Smart S.r.l.); Sebastiano Battiato (Universita di Catania); Giovanni Maria Farinella (University of Catania, Italy)

4.19   Oral Session VI: Deep Learning

Time: 1.30 -3.00pm
Date: 30 Nov 2018 (Friday)
Venue: AUT WA 224
Chair: Saibal Mukhopadhyay (Georgia Tech)

- **OS VI.1**: Edge-Host Partitioning of Deep Neural Networks with Feature Space Encoding for Resource-Constrained Internet-of-Things Platforms
  Jong Hwan Ko (Georgia Tech); Taesik Na (Georgia Tech); Mohammad Amir (Georgia Tech); Saibal Mukhopadhyay (Georgia Tech)

- **OS VI.2**: WatchNet: Efficient and Sequential Network for People Detection in Video Surveillance Systems
  Michael Villamizar (Idiap Research Institute); Angel N Martinez Gonzalez (Idiap research institute; EPFL); Olivier Canevet (Idiap Research Institute); Jean-Marc Odobez (IDIAP/EPFL, Switzerland)

- **OS VI.3**: Orientation-Aware Regression for Oriented Bounding Box Estimation
  Ryusuke Nosaka (Intelligent Systems Laboratory, SECOM CO., LTD.); Hidenori Ujiie (Intelligent Systems Laboratory, SECOM CO., LTD.); Takaharu Kurokawa (Intelligent Systems Laboratory, SECOM CO., LTD.)

- **OS VI.4**: Real-time maritime situation awareness based on deep learning with dynamic anchors
  Vincent Marie (Aix Marseille Univ, Universite de Toulon, CNRS, LIS, UMR 7020); Ikhlef Bechar (Aix Marseille Univ, Universite de Toulon, CNRS, LIS, UMR 7020); Frederic Bouchara (University of Toulon)

4.20   Oral Session VII: Sensors and Security

Time: 3.30 - 5.10pm
Date: 30 Nov 2018 (Friday)
Venue: AUT WA 224
Chair: Edward Delp (Purdue University)

- **OS VII.1**: Deepfake Video Detection Using Recurrent Neural Networks
  David Guera (Purdue University); Edward Delp (Purdue University)

- **OS VII.2**: Counting People by Infrared Depth Sensors
  Carlos Orrite (University of Zaragoza); Daniel Vicente (University of Zaragoza)

- **OS VII.3**: Anomaly Detection in Crowds using multi sensory information
  Lucio Marcenaro (Universita degli Studi di Genoa, Genoa); Carlo Regazzoni (Universita degli Studi di Genoa, Genoa); Muhammad Irfan (University of Genova)

- **OS VII.4**: Ontology-based Masking Loss for Improved Generalization in Remote Sensing Semantic Retrieval
  Arne Schumann (Fraunhofer IOSB); Lars Sommer (Fraunhofer IOSB, Karlsruhe, Germany); Max Vogler (Fraunhofer IOSB)

- **OS VII.5**: Rotation-invariant Binary Representation of Sensor Pattern Noise for Source-Oriented Image and Video Clustering
  Xufeng Lin (Charles Sturt University); Chang-Tsun Li (Charles Sturt University)

4.21   Poster Session I

Time: 10.00 - 10.30 am
Date: 28 Nov 2018 (Wednesday)
Venue: AUT WG 201
Chair: Hongmou Zhang (DLR, Germany)

- PS I.1: GPS and IMU Require Visual Odometry for Elevation Accuracy
  Dirk Baumbach (DLR); Hongmou Zhang (DLR); Sergey Zuev (DLR); Jurgen Wohlfeil (DLR);
  Martin Knoche (NIC); Reinhard Klette (Auckland University of Technology)

- PS I.2: Comprehensive Evaluation of Deep Learning based Detection Methods for Vehicle
  Detection in Aerial Imagery
  Lars Sommer (Fraunhofer IOSB, Karlsruhe, Germany); Oliver Acatay (Fraunhofer IOSB,
  Karlsruhe, Germany); Arne Schumann (Fraunhofer IOSB)

- PS I.3: A Fast and Accurate Forward Vehicle Start Alarm by Tracking Moving Edges Obtained
  from Dashboard Camera
  Kang Yi (Handong Global University); Kyeong Hoon Jung (Kookmin University)

- PS I.4: Use of a Confidence Map Towards Improved Multi-layer Stixel Segmentation
  Noor Haitham Saleem (AUT); Reinhard Klette (Auckland University of Technology); Fay
  Huang (National Ilan University)

- PS I.5: Content-Based Multi-Camera Video Alignment using Accelerometer Data
  Antonio C. Nazare (Federal University of Minas Gerais); Filipe de O. Costa (Fundacao CPqD
  Centro de Pesquisa e Desenvolvimento em Telecomunicacoes); William R Schwartz (Federal University of Minas Gerais)

- PS I.6: Image-based Sea/Land Map Generation from Radar Data
  Francesc Joan Riera (Aalborg University); Rasmus Engholm (Terma A/S); Lars Jochumsen
  (Terma A/S); Thomas B. Moeslund (Aalborg University)

- PS I.7: Implementation of Modulated Wideband Converter compressed sensing scheme
  based on COTS lowpass filter with amplitude and phase compensation for spectrum monitoring
  Lap Luat Nguyen (Universite de Bretagne Occidentale); Anthony Fiche (Universite de Bretagne Occidentale); Roland Gautier (Universite de Bretagne Occidentale); Charles Canaff
  (Universite de Bretagne Occidentale); Emanuel Radoi (Universite de Bretagne Occidentale);
  Gilles Burel (Universite de Bretagne Occidentale)

- PS I.8: Neural network control for active cameras using master-slave setup
  Renan Oliveira Reis (Federal University of Minas Gerais); William R Schwartz (Federal University of Minas Gerais); Igor Dias (Federal University of Minas Gerais)

- PS I.9: Face Identification for an in-vehicle Surveillance System Using Near Infrared Camera
  Minsong Ki (Yonsei University); Bora Cho (Yonsei University); Taejun Jeon (Yonsei University); Yeongwoo Choi (Sookmyung Women's University); Hyeran Byun (Yonsei University)

- OS IV.4: Real-Time Vehicle Re-Identification System Using Symmelets and HOMs
  Jun-Wei Hsieh (National Taiwan Ocean University)

4.22   Poster Session II

Time: 12.00 - 12.30 pm
Date: 28 Nov 2018 (Wednesday)
Venue: AUT WG 201
Chair: Stefan Hooper (Auckland University of Technology)

- OS I.1: Simultaneous event localization and recognition for surveillance video
  Yikang Li (Arizona State University); Tianshu Yu (Arizona State University); Baoxin Li (Arizona State University

- OS I.2: Optical Flow Dataset and Benchmark for Visual Crowd Analysis
  Gregory Schroder (Technische Universität Berlin); Tobias Senst (TU Berlin); Erik Bochinski (TU Berlin); Thomas Sikora (TU Berlin)

- OS I.3: Fast but Not Deep: Efficient Crowd Abnormality Detection with Local Binary Tracklets
  Mahdyar Ravanbakhsh (University of Genova); Hossein Mousavi (Polytechnique Montreal); Moin Nabi (SAP); Lucio Marcenaro (Universita degli Studi di Genoa, Genoa); Carlo Regazzoni (Universita degli Studi di Genoa, Genoa)

- PS II.1: A Vision-based Transfer Learning Approach for Recognizing Behavioral Symptoms in People with Dementia
  Zachary Wharton (Edge Hill University); Erik Thomas (Edge Hill University); Bappaditya Debnath (Edge Hill University); Ardhendu Behera (Edge Hill University)

- PS II.2: Unknown Crowd Event Detection from Phase Based Statistics
  Alexia Briassouli (Maastricht university)

- PS II.3: Enhancing Visualisation of Anatomical Presentation and Education Using Marker-based Augmented Reality Technology on Web-based Platform
  Ingjie Wang (Auckland University of Technology); Minh Nguyen (AUT, NZ); Huy Le (Auckland University of Technology); Stefan Hooper (Auckland University of Technology)

- PS II.4: Scene-based Non-uniformity Correction using Complementary Fixed Pattern Noise Models
  Omer Faruk Adil (ASELSAN); Huseyin Seckin Demir (ASELSAN); Samet Almali (ASELSAN)

- PS II.5: Deep-Temporal LSTM for Daily Living Action Recognition
  Srijan Das (INRIA); Michal Koperski (INRIA); Francois Bremond(INRIA Sophia Antipolis, France); Gianpiero Francesca (Toyota-Europe)

- PS II.6: Residual Transfer Learning for Multiple Object Tracking
  Juan Diego Gonzales Zuniga (INRIA); NGUYEN THI LAN ANH (INRIA Sophia-Antipolis); Francois Bremond (INRIA Sophia Antipolis, France)

4.23   Poster Session III

Time: 10.00 - 10.30 am
Date: 29 Nov 2018 (Thursday)

Venue: AUT WG 201
Chair: Alexander Gatter (DLR, Germany)

- OS II.1: Wardrobe Model for Long Term Re-identification and Appearance Prediction
  Kyung Won Lee (SUNY at Buffalo); Nishant Sankaran (University at Buffalo); Srirangaraj
  Setlur (University at Buffalo, SUNY); Nils Napp (University at Buffalo); Venu Govindaraju
  (University at Buffalo, SUNY)

- OS II.2: Combining Local and Global Models for Robust Re-detection in Generic Object
  Tracking
  Goutam Bhat (Linköping University); Martin Danelljan (Linköping University); Fahad Shah-
  baz Khan(Linköping University); Michael Felsberg (Linköping)

- OS II.3: Cascade-Dispatched Classifier Ensemble and Regressor for Pedestrian Detection
  Remi Trichet (DCU); Francois Bremond (INRIA Sophia Antipolis, France)

- OS II.4: CAMEL Dataset for Visual and Thermal Infrared Multiple Object Detection and
  Tracking
  Evan T Gebhardt (Georgia Institute of Technology)

- PS III.1: Evaluating deep semantic segmentation networks for object detection in maritime
  surveillance
  Tom Cane (University of Reading); James Ferryman (Univ. Of Reading, UK)

- PS III.2: Pixel Offset Regression (POR) for Single-shot Instance Segmentation
  Yuezun Li (SUNY, albany); Xiao Bian (GE Global Research); Ming-Ching Chang (Albany
  University); Longyin Wen (JD Finance); Siwei Lyu (University at Albany)

- PS III.3: A Consensus Framework for Segmenting Video with Dynamic Textures
  Lazhar Khelifi (Montreal university); Max Mignotte (Universite de Montreal)

- PS III.4: Contactless Multiple Finger Segments based Identity Verification using Information
  Fusion from Higher Order Spectral Invariants
  Akmal Jahan Mohamed Abdul Cader (Queensland University of Technology, Australia); Jas-
  mine Banks (QUT); Vinod Chandran (QUT); Kien Nguyen Thanh (Queensland University of
  Technology)

- PS III.5: Classifying self-cast shadow regions in aerial camera images
  Alexander Gatter (DLR, Germany)

4.24   Poster Session IV

Time: 12.00 - 12.30 pm
Date: 29 Nov 2018 (Thursday)
Venue: AUT WG 201
Chair: Francois Bremond (INRIA Sophia Antipolis, France)

- OS III.1: A Generalized Optimization Framework for Score Aggregation in Person Re-identification Systems
  Arko Barman (University of Houston); Shishir Shah (University of Houston)

- OS III.2: Fast Simultaneous People Detection and Re-identification in a Single Shot Network
  Wiebe Van Ranst (KU Leuven); Toon Goedeme (KU Leuven - EAVISE)

- OS III.3: An Intent-Based Automated Traffic Light for Pedestrians
  Christian Ertler (Graz University of Technology); Horst Possegger (Graz University of Technology); Michael Opitz (Graz University of Technology); Horst Bischof (Graz University of Technology)

- PS IV.1: Detection of High-Risk Intoxicated Passengers in Video Surveillance
  Jae-Yeong Leez (Electronics and Telecommunications Research Institute); Sunglok Choi (ETRI); Jaeho Lim (ETRI)

- PS IV.2: Online Detection of Long-Term Daily Living Activities by Weakly Supervised Recognition of Sub-Activities
  Farhood Negin (INRIA sophia antipolis); Abhishek Goel (INRIA); Abdelrahman G. Abubakr (INRIA); Gianpiero Francesca (Toyota-Europe); Francois Bremond (INRIA Sophia Antipolis, France)

- PS IV.3: Deep Residual Learning for Analyzing Customer Satisfaction using Video Surveillance
  Nehemia Sugianto (Southern Cross University); Dian Tjondronegoro (Southern Cross University)

- PS IV.4: Late Fusion of Multiple Convolutional Layers for Pedestrian Detection
  Ujjwal Ujjwal (INRIA); Aziz Dziri (VEDECOM); Bertrand Leroy (VEDECOM); Francois Bremond (INRIA Sophia Antipolis, France)

- PS IV.5: Drone Detection Using Convolutional Neural Networks with Acoustic STFT Features
  Yoojeong Seo (Soongsil University); Beomhui Jang (Soongsil University); Sungbin Im (Soongsil University)

- PS IV.6: Local Computation with Adaptive Spatial Clustering for Multi-Size Motion Patch Proposals in WAMI
  Yijun Lin (University of Chinese Academy of Sciences); Fengge Wu (Institute of Software Chinese Academy of Sciences)

- PS IV.7: Adaptive Control of Camera Modality with Deep Neural Network-Based Feedback for Efficient Object Tracking
  Priyabrata Saha (Georgia Institute of Technology); Burhan A Mudassar (Georgia Institute of Technology); Saibal Mukhopadhyay (Georgia Institute of Technology)

4.25   Poster Session V

Time: 12.00 - 12.30 pm
Date: 29 Nov 2018 (Thursday)
Venue: AUT WG 201

Chair: Anthony Griffin (Auckland University of Technology, New Zealand)

- OS IV.1: Efficient Camera Tampering Detection with Automatic Parameter Calibration
  Alexey Sidnev (Intel); Marina Barinova (Intel); Sergei Nosov (Intel)

- OS IV.2: Image fusion and influence function for performance improvement of ATM vandalism action recognition
  Hanseok Ko (Korea University); Yun Jeongseop (korea University)

- OS IV.3: Multispectral Matching using Conditional Generative Appearance Modeling
  Christoph Bodensteiner (Fraunhofer IOSB); Sebastian W Bullinger (Fraunhofer IOSB); Michael Arens (Fraunhofer IOSB)

- OS V.1: GPU-accelerated Height Map Estimation with Local Geometry Priors in Large Scenes
  Alireza Rezaei (Paris Sud University); Nicola Pellicano (Paris Sud University); Emanuel Aldea (University Paris Sud)

- OS V.2: Detecting and Counting Sheep with a Convolutional Neural Network
  Farah Sarwar (Auckland University of University); Anthony Griffin (Auckland University of University)

- OS V.3: Online Multi-Object Tracking with Historical Appearance Matching and Scene Adaptive Detection Filtering
  Young-Chul Yoon (Gwangju Institute of Science and Technology); Abhijeet Boragule (Gwangju Institute of Science and Technology); Young-min Song (Gwangju Institute of Science and Technology); Kwangjin Yoon (Gwangju Institute of Science and Technology); Moongu Jeon (Gwangju Institute of Science and Technology)

- PS V.1: Scene Adaptation for Semantic Segmentation using Adversarial Learning
  Daniele Di Mauro (University of Catania); Antonino Furnari (University of Catania); Giuseppe Patane (Park Smart S.r.l.); Sebastiano Battiato (Universita di Catania); Giovanni Maria Farinella (University of Catania, Italy)

- PS V.2: MORA: A Generative Approach to Extract Spatiotemporal Information Applied to Gesture Recognition
  Igor L Bastos (Universidade Federal de Minas Gerais); Victor Melo (UFMG); Gabriel Goncalves (Universidade Federal de Minas Gerais); William R Schwartz (Federal University of Minas Gerais)

- PS V.3: Adapting MobileNets for mobile based upper body pose estimation
  Bappaditya Debnath (Edge Hill University); Mary O'brien (Edge Hill University); Motonori Yamaguchi (Edge Hill University); Ardhendu Behera (Edge Hill University)

- PS V.4: Acoustic Scene Classification Using Joint Time Frequency Image-Based Feature Representations
  Shamsiah Abidin (The University of Western Australia); Roberto Togneri (The University of Western Australia); Ferdous Sohel (Murdoch University)

4.26   Poster Session VI

Time: 12.00 - 12.30 pm
Date: 30 Nov 2018 (Friday)
Venue: AUT WG 201
Chair: Xufeng Lin (Charles Sturt University);

- PS VI.1: Latent Body-Pose guided DenseNet for Recognizing Driver's Fine-grained Secondary Activities
  Ardhendu Behera (Edge Hill University); Alexander H Keidel (Edge Hill University)

- PS VI.2: A Blockchain Implementation for the Cataloguing of CCTV Video Evidence
  Michael Kerr (ACIC); Ron van Schyndel (RMIT University); Fengling Han (RMIT University)

- PS VI.3: Encrypted Domain Skin Tone Detection For Pornographic Image Filtering
  Waheeb Yaqub (New York University Abu Dhabi); Manoranjan Mohanty (University of Auckland, New Zealand); Nasir Memon (New York University)

- PS VI.4: Multimodel Drunk Density Estimation for Safety Assessment
  Pratibha Kumari (IIT ROAPR); Mandhatya singh (IIT ROPAR); Mukesh Saini (IIT Ropar)

- PS VI.5: Context is King: Privacy Perceptions of Camera-based Surveillance
  Andrew Tzer-Yeu Chen (University of Auckland); Morteza Biglari-Abhari (University of Auckland); Kevin I-Kai Wang (University of Auckland, New Zealand)

- OS VII.1: Deepfake Video Detection Using Recurrent Neural Networks
  David Guera (Purdue University); Edward Delp (Purdue University)

- OS VII.2: Counting People by Infrared Depth Sensors
  Carlos Orrite (University of Zaragoza); Daniel Vicente (University of Zaragoza)

- OS VII.3: Anomaly Detection In Crowds Using Multi- sensory Information
  Lucio Marcenro (Universita degli Studi di Genoa, Genoa); Carlo Regazzoni (Universita degli Studi di Genoa, Genoa); Muhammad Irfan (University fo Genova)

- OS VII.4: Ontology-based Masking Loss for Improved Generalization in Remote Sensing Semantic Retrieval
  Arne Schumann (Fraunhofer IOSB); Lars Sommer (Fraunhofer IOSB, Karlsruhe, Germany); Max Vogler (Fraunhofer IOSB)

- OS VII.5: Rotation-invariant Binary Representation of Sensor Pattern Noise for Source-Oriented Image and Video Clustering
  Xufeng Lin (Charles Sturt University); Chang-Tsun Li (Charles Sturt University)

5   Local Program Chair's Thanks

Thanks to all the authors who submitted their papers to AVSS18. This year, we received 183 submissions in total. After a first round of double-blind review, we (the program co-chairs) accepted 64 papers for further processing. After the following meta review, we selected 20 papers for oral presentations and 42 papers for poster presentations. This year, authors of oral presentations have been provided the chance to display a poster as well. We appreciate reviewers and meta-reviewers great contributions to this conference.

The Best-paper Award will be presented at the end of these 3-day conference presentations. We are thankful to the committee who recommended the Best-paper Award of this conference. We are grateful for the sponsorship by the *Journal of Imaging* for the Best-paper Award.

AVSS 2018 starts on the first day with tutorial sessions, workshops and challenges. During this issue of AVSS, we have 2 challenges, 6 workshops and 5 keynote speeches on multiple aspects, to manifest and assert the theme of this conference: digital surveillance and artificial intelligence (AI).

We thank the AUT Events team for providing their assistance and collaboration in due course during the preparation and registration of this conference. We thank the IEEE organization for their confidence when deciding to have this conference at Auckland, New Zealand.

Thank you all for your particular contributions and your interest in this conference. We see you at AVSS'19.

Dr. Wei Qi Yan, Program Co-Chair of AVSS 2018

Short Biography: Dr. Wei Qi Yan is an associate professor with the Auckland University of Technology (AUT); his expertise is in digital security, surveillance, privacy and forensics; he is leading the Computing Cybersecurity (CCS) Research Group at AUT. Dr. Yan is an Editor-in-Chief (EiC) of the International Journal of Digital Crime and Forensics (IJDCF); he was an exchange computer scientist between the Royal Society of New Zealand (RSNZ) and the Chinese Academy of Sciences (CAS), China; he is a member of the ACM and a senior member of the IEEE. Dr. Yan is a guest (adjunct) professor with PhD supervision of the Chinese Academy of Sciences, China.

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