

Machine Learning and AI: Virtual Programme Track



Overview of presentations on machine learning and AI throughout the Remote Sensing and Security + Defence Symposia

MONDAY 9 SEPTEMBER

Conf. 11149, REMOTE SENSING FOR AGRICULTURE, ECOSYSTEMS, AND HYDROLOGY

Location: Luxembourg

Grassland monitoring based on Sentinel-1

Paper 11149-1

Near real-time mapping of burned area from Sentinel-2 data

Paper 11149-10

Early detection of *Heracleum mantegazzianum* (giant hogweed) based on leaf spectral characteristics from UAV images using SVM and OBIA techniques

Paper 11149-12

CONF. 11155, IMAGE AND SIGNAL PROCESSING FOR REMOTE SENSING

Location: Amsterdam

Stacked Lossless Deconvolutional Network for remote sensing image super-resolution

Paper 11155-8

Remote sensing and machine learning for tree detection and classification in forestry applications

Paper 11155-14

CONF. 11157, REMOTE SENSING TECHNOLOGIES AND APPLICATIONS IN URBAN ENVIRONMENTS

Location: Madrid 1

Building façade image semantic segmentation using an ensemble of deep neural networks

Paper 11157-12

CONF. 11160, ELECTRO-OPTICAL REMOTE SENSING

Location: Londres 2

Transfer learning on GPR data for IED detection in various environments

Paper 11160-14

TUESDAY 10 SEPTEMBER

Conf. 11149, REMOTE SENSING FOR AGRICULTURE, ECOSYSTEMS, AND HYDROLOGY

Location: Luxembourg

Multitemporal crop classification with machine learning techniques

Paper 11149-28

Texture-based analysis of hydrographical basins with multispectral imagery

Paper 11149-29

Machine learning model forecasting model for grass yield estimation in Ireland

Paper 11149-30

Farming systems monitoring using machine learning and trend analysis methods based on fitted NDVI time series data in a semi-arid region of Morocco

Paper 11149-31

CONF. 11155, IMAGE AND SIGNAL PROCESSING FOR REMOTE SENSING

Location: Amsterdam

Building segmentation of remote sensing images using deep neural networks and domain transform CRFs

Paper 11155-21

Deep learning-based extraction of building contours for large-scale 3D urban reconstruction

Paper 11155-22

Object detection in satellite images based on human cooperative semi-self-training

Paper 11155-23

Dense-HSGP: dense Gaussian-based context pooling for very high-resolution building extraction

Paper 11155-24

ClusterNet: unsupervised generic feature learning for fast interactive satellite image segmentation

Paper 11155-25

Approximating JPEG 2000 wavelet representation through deep neural networks for remote sensing image scene classification

Paper 11155-27

Recurrent feedback CNN for water region estimation from multitemporal satellite images

Paper 11155-79

A novel 3D-CNN deep learning network for hyperspectral image classification

Paper 11155-29

Spectral perturbation method for deep learning-based classification of remote sensing hyperspectral images

Paper 11155-30

Detecting ineligible features in agricultural fields on multitemporal high resolution satellite images using a two-stage DNN architecture

Paper 11155-31

AI AND MACHINE LEARNING VIRTUAL TRACK

CONF. 11156, EARTH RESOURCES AND ENVIRONMENTAL REMOTE SENSING/GIS APPLICATIONS

Location: Berlin

A semi-automatic approach to derive land cover classification in RUSLE method (Invited Paper)

Paper 11156-10

An assessment of support vector machine for land cover classification over South Korea using GOCI data

Paper 11156-13

An approach for generating a high-accuracy machine learning model for high-resolution geochemical map completion using remote sensing data: a case study, Arizona, USA

Paper 11156-15

CONF. 11157, REMOTE SENSING TECHNOLOGIES AND APPLICATIONS IN URBAN ENVIRONMENTS

Location: Madrid 1

DubaiSat and Sentinel images for urban growth detection using convolutional neural network, Dubai City

Paper 11157-16

Machine learning methods and classification of vegetation in Brest (France) (Invited Paper)

Paper 11157-23

CONF. 11166, COUNTERTERRORISM, CRIME FIGHTING, FORENSICS, AND SURVEILLANCE TECHNOLOGIES

Location: Varsovie

Automatic threat evaluation for border security and surveillance

Paper 11166-15

Evaluation of acoustic detection of UAVs using machine learning methods

Paper 11166-16

Assistance System for the Situation Aware Defense of Danger through Unmanned Aerial Systems

Paper 11166-17

A local area UAS detection system from an elevated observation position

Paper 11166-18

A sensor tasking algorithm for EO/IR sensors carried by UAVs

Paper 11166-19

A multimodal vision sensor for autonomous driving

Paper 11166-20

Image enhancement of pre-processed fingerprints using color information and spatial frequency filtering

Paper 11166-21

Color augmentation techniques for video surveillance in the visible and thermal spectral range

Paper 11166-22

Semi-supervised adversarial training of a lightweight neural network for visual recognition

Paper 11166-23

A comparison study of deep visual tracking on infrared imagery in a maritime environment

Paper 11166-24

An architecture for automatic multimodal video data anonymization to ensure data protection

Paper 11166-25

Automated license plate detection for image anonymization

Paper 11166-26

A utility-driven surveillance approach to trade-off security and privacy

Paper 11166-27

Action localization and classification in long-distance surveillance

Paper 11166-30

SESSION OF RELATED INTEREST

Remote Surveillance and Autonomous Sensors (Session 3, Conf. 11166)

POSTERS—TUESDAY

Severe Visibility Marine Fog Detection using COMS/GOCI VIS bands

Paper 11152-42

Use of Fris-Tax clustering of WWLLN data and MODIS images to predict forest fire danger

Paper 11152-46

Fusion of surface ceilometer data and satellite cloud retrievals in 2D mesh interpolating model with clustering

Paper 11152-49

Estimation of cloudiness and aerosol characteristics in the atmosphere from spectral measurements of scattered solar radiation using a neural network

Paper 11152-51

Landslide detection with ALOS-2/PALSAR-2 data using convolutional neural networks: a case study of 2018 Hokkaido Eastern Ibari earthquake

Paper 11154-6

Land cover classification and change detection analysis of multi-spectral satellite images using machine learning

Paper 11155-56

Performance evaluation of convolutional neural network at hyper-spectral and multispectral resolution for classification

Paper 11155-61

Multisensor image fusion based on generative adversarial networks

Paper 11155-62

Deep learning for dense labeling of hydrographic regions in very high resolution imagery

Paper 11155-63

Retrieval of precipitation based on microwave sensor of satellite using deep learning and blending grid-based multisatellite precipitation using EBMA

Paper 11155-72

Crop classification based on lightened convolutional neural networks in multispectral images

Paper 11155-80

AI AND MACHINE LEARNING VIRTUAL TRACK

WEDNESDAY 11 SEPTEMBER

CONF. 11152, REMOTE SENSING OF CLOUDS AND THE ATMOSPHERE

Location: Londres 1

Advances in neural network detection and retrieval of multilayer clouds for CERES using multispectral satellite data

Paper 11152-1

Conf. 11154, ACTIVE AND PASSIVE MICROWAVE REMOTE SENSING FOR ENVIRONMENTAL MONITORING

Location: Amsterdam

Capsule and convolutional neural network-based SAR ship classification in Sentinel-1 data

Paper 11154-4

CONF. 11155, IMAGE AND SIGNAL PROCESSING FOR REMOTE SENSING

Location: Amsterdam

Blind noise parameters estimation for multichannel images using deep convolutional neural networks

Paper 11155-38

Pixel level smoke detection model with deep neural network

Paper 11155-39

Road and railway detection in SAR images using deep learning

Paper 11155-48

CONF. 11156, EARTH RESOURCES AND ENVIRONMENTAL REMOTE SENSING/GIS APPLICATIONS

Location: Berlin

Conditioning factor determination for mapping and prediction of landslide susceptibility using machine learning algorithms

Paper 11156-19

Effects of variable selection on the landslide susceptibility assessment using machine learning techniques

Paper 11156-22

Evaluating the performance of support vector machines (SVMs) and random forest (RF) in Li-pegmatite mapping: preliminary results

Paper 11156-26

THURSDAY 12 SEPTEMBER

CONF. 11152, REMOTE SENSING OF CLOUDS AND THE ATMOSPHERE

Location: Londres 1

Assessment of three-dimensional, fine-granular measurement of particulate matter by Smart Air Quality Network in urban area

Paper 11152-20

WEDNESDAY - THURSDAY 11-12 SEPTEMBER

Conf. 11169, ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN DEFENSE APPLICATIONS

Location: Varsovie

Full conference programme is focused on AI and Machine Learning: please see the programme at: www.spie.org/sd114

Conference sessions at a glance:

Posters-Tuesday

Session 1: AI in Intelligence, Surveillance, and Reconnaissance (Joint Session 5)

Session 2: Object Detection (Joint Session 6)

Session 3: Segmentation (Joint Session 7)

Session 4: AI for Defence Applications

Session 5: Image Enhancement, Fusion, and Backgrounds