UNIVERSITY OF THE
WEST *of* SCOTLAND

UWS

UWS Academic Portal

On V&V of intelligent vision systems

Olszewska, Joanna Isabelle

Published: 01/10/2020

Document Version
Publisher's PDF, also known as Version of record

Link to publication on the UWS Academic Portal

On V&V of
Intelligent Vision Systems

Dr Joanna Isabelle Olszewska

School of Computing and Engineering
University of West Scotland, UK

Abstract

- Nowadays, softwares and systems are increasingly relying on Artificial Intelligence (AI). In particular, Intelligent Vision Systems (IVS) are using machine learning and computer vision techniques to process vast amounts of visual data such as images, videos for applications ranging from social media apps to m-health services, from street surveillance cameras to airport e-gates, from drones to companion robots.

- Thus, IVS require effective and ethical data processing along with efficient signal processing and real-time hardware/software integration as well as user/agent experience (UX/AX) and (cyber)security features.

- Consequently, IVS softwares necessitate verification and validation to check if they conform to their specifications and if they do what the user really needs/wants, respectively.

- Hence, in this talk, we present a new methodology called D7-R4 which allows developers to produce quality, new-generation intelligent systems to be deployed safely in real-time and in real-world environments.

Some References

Olszewska (2019) 'Designing autonomous and transparent intelligent vision systems'. In *Proceedings of the International Conference on Agents and Artificial Intelligence* (ICAART 2019).

Olszewska (2018) 'Ontologies for Vision Agents'. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2018)*.

Olszewska and McCluskey (2011) 'Ontology-coupled active contours for dynamic video scene understanding'. In *Proceedings of the IEEE International Conference on Intelligent Engineering Systems*, pp. 239-374.

Alqaisi et al. (2012) 'Embedded double matching of local descriptors for a fast automatic recognition of real-world objects'. *Proceedings of the IEEE International Conference on Image Processing* (ICIP 2012), pp. 2385-2388.

Olszewska (2013) 'Multi-Scale, Multi-Feature Vector Flow Active Contours for Automatic Multiple-Face Detection'. In *Proceedings of the International Conference on Bio-Inspired Systems and Signal Processing (BIOSIGNALS),* pp. 429-435.

Olszewska (2015) 'Active contour based optical character recognition for automated scene understanding'. *Neurocomputing*, 161(C):65-71.

Olszewska et al. (2017) 'Ontologies for autonomous robotics'. In *Proceedings of the IEEE International Conference on Robot and Human Interactive Communication* (RO-MAN 2017), pp. 189-194.

Bayat et al. (2016) 'Requirements for building an ontology for autonomous robots'. *Industrial Robot: An International Journal*, 43(5):469-480.

Wood and Olszewska (2012) 'Lighting-variable AdaBoost based-on system for robust face detection'. In *Proceedings of the International Conference on Bio-Inspired Systems and Signal Processing*, pp. 494-497.

Fiorini et al. (2017) 'A suite of ontologies for robotics and automation'. *IEEE Robotics and Automation Magazine*, 24(1):8-11.

Calzado et al. (2018) 'SAMI: Interactive, multi-sense robot architecture'. In *Proceedings of the IEEE International Conference on Intelligent Engineering Systems,* pp. 317-322.

Olszewska et al. (2018) 'Robotic ontological standard development life cycle'. *IEEE International Conference on Robotics and Automation* (ICRA 2018), pp. 1-6.

Pignaton de Freitas et al. (2020) 'Ontological concepts for information sharing in cloud robotics'. *Journal of Ambient Intelligence and Humanized Computing,* Springer, pp.1-14.

Olszewska (2019) 'D7-R4: Software development life cycle for intelligent vision systems'. In *Proceedings of the International Conference on Knowledge Engineering and Ontology Development (KEOD)*, pp. 435-441.

On V&V of Intelligent Vision Systems

Thank You

Contact Details
Dr Joanna Isabelle Olszewska
joanna.olszewska@ieee.org

School of Computing and Engineering
University of West of Scotland (UWS)
United Kingdom