Michal Koperski

RESEARCH SCIENTIST AT TOOPLOOX

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Education

INRIA, University of Nice Sophia Antipolis   *Sophia Antipolis, France*

PH.D. IN COMPUTER SCIENCE (COMPUTER VISION)   *Jan. 2014 - Nov. 2017*

- Title: "Human Action Recognition in Videos with Local Representation",
- Advisor: Francois Bremond, INRIA,
- Reviewer: Matthieu Cord, University Pierre Marie Currie,
- Reviewer: Leonid Sigal, University of British Columbia,
- Examinator: Jean-Marc Odobez, IDIAP,
- President: Federic Precioso, University of Nice Sophia Antipolis.

Poznan University of Technology   *Poznan, Poland*

M.SC. IN COMPUTER SCIENCE AND ENGINEERING   *Feb. 2007 - Aug. 2009*

Poznan University of Technology   *Poznan, Poland*

B.S. IN COMPUTER SCIENCE AND ENGINEERING   *Oct. 2004 - Feb. 2007*

Experience

Tooploox   *Wroclaw, Poland*

RESEARCH SCIENTIST   *Aug. 2018 - PRESENT*

- Working on deep neural networks models for recognition, detection on images and videos,
- Advising junior scientist,
- Research: incremental learning [3],
- Working on code transfer to our industrial partners.

INRIA   *Sophia Antipolis, France*

POST-DOC   *Dec. 2017 - Jul. 2018*

- Worked on deep neural networks with spatio-temporal attention for action recognition,
- Worked on real-time action detection,
- Published 6 scientific papers [4, 5, 7, 8, 6, 1],
- Code transfer to Toyota Partner Robot.

INRIA   *Sophia Antipolis, France*

PHD STUDENT   *Feb. 2014 - Nov. 2017*

- Proposed, implemented and validated several methods for action recognition (multimodal RBG+D desriptor, Brownian Covariance, Spatio-Temporal layout for CNN and Fisher Vector representation) and action detection (Real time Fisher Vector representation),
- Published 9 scientific papers [2, 10, 12, 11, 13, 14, 15, 16, 17] and [18],
- The code of the proposed methods was successfully transferred to Toyota.

Disney Research   *Pittsburgh, PA, USA*

RESEARCH INTERN   *Jan. 2016 - Apr. 2016*

- Supervisors: Peter Carr, Slawomir Bak,
- Proposed cross-view Fisher Vector representation for People Re-Identification,
- Published 1 scientific paper [9] ,
- 1 patent request was filed.

INRIA   *Sophia Antipolis, France*

RESEARCH INTERN   *Apr. 2013 - Sep. 2013*

- Supervisor: Francois Bremond,
- Proposed multimodal RGB-D descriptor for action recognition,
- Published 1 scientific paper [17].

Wroclaw University of Technology   *Wroclaw, Poland*

TEACHING ASSISTANT   *Apr. 2012 - Mar. 2013*

- Teaching "Algorithms and Data Structures"
- Teaching "Operating Systems"

Poznan University of Technology *Poznan, Poland*

Research Engineer *Jan. 2010 - Apr. 2012*

- BirdWatch project at Intelligent Decision Support System Laboratory,
- Implemented and validated bird species detection system for mobile devices (ARM),
- Teaching "Software Engineering"
- Published 1 book chapter [19].

Skills

Programming	Python, Matlab, Java, C/C++
Frameworks	PyTroch, Scikit-Learn, Numpy, Pandas, Caffe, MatConvNet
Languages	English (Fluent), French (Intermediate), Russian (Intermediate), German (Beginner), Polish (Native)

Mentoring

Master Students

2018	**Abhishek Goel**, co-advised by F. Bremond, Online Action Detection [8]	*INRIA*
2017	**Srijan Das**, co-advised by F. Bremond, Pose based CNN for Action Recognition [10]	*INRIA*
2017	**Killian Barrere**, co-advised by F. Bremond, CNN training with limited amount of data	*INRIA*

Professional activities

Referee and Reviewer

- IEEE Transactions on Multimedia
- British Machine Vision Conference

Projects

- Action dection framework for Toyota Partner Robot system
- BirdWatch – system for automatic bird species detection

Teaching

- Artificail Neural Networks (Kozminski Univ., Warsaw, 2019)
- Algorithms and Data Structures (Wroclaw Univ. of Tech., 2013)
- Operating Systems (Wroclaw Univ. of Tech., 2013)
- Software Engineering (Poznan Univ. of Tech., 2010-2012)

Publications

Journal Articles

[1] Farhood Negin, Pau Rodriguez, Michal Koperski, Adlen Kerboua, Jordi Gonzàlez, Jérémy Bourgeois, Emmanuelle Chapoulie, Philippe Robert, and François Bremond, "PRAXIS: Towards automatic cognitive assessment using gesture recognition"
Expert Systems with Applications vol. 106 (Sept. 2018) pp. 21–35. 2018

. [2] Carlos Crispim-Junior, Alvaro Gomez Uria, Carola Strumia, Michal Koperski, Alexandra König, Farhood Negin, Serhan Cosar, Anh Tuan Nghiem, Duc Phu Chau, Guillaume Charpiat, and Francois Bremond, "Online Recognition of Daily Activities by Color-Depth Sensing and Knowledge Models"
Sensors vol. 17 (June 2017) p. 1528. 2017

Conference Proceedings

[3] Michal Koperski, Tomasz Konopczynski, Rafal Nowak, Piotr Semberecki, and Tomasz Trzcinski, "Plugin Networks for Inference under Partial Evidence"
Winter Conference on Applications of Computer Vision (WACV), 2020

[4] Srijan Das, Rui Dai, Michal Koperski, Luca Minciullo, Lorenzo Garattoni, Francois Bremond, and Gianpiero Francesca, "Toyota Smarthome: Real-World Activities of Daily Living"
International Conference on Computer Vision (ICCV), 2019

[5] Srijan Das, Monique Thonnat, Kaustubh Sakhalkar, Michal Koperski, Francois Bremond, and Gianpiero Francesca, "A New Hybrid Architecture for Human Activity Recognition from RGB-D videos"
25th International Conference on MultiMedia Modeling (MMM), 2019

[6] Srijan Das, Michal Koperski, Francois Bremond, and Gianpiero Francesca, "Deep-Temporal LSTM for Daily Living Action Recognition"
15th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS), 2018

[7] Srijan Das, Kaustubh Sakhalkar, Michal Koperski, and Francois Bremond, "Spatio-Temporal Grids for Daily Living Action Recognition"
11th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), 2018

[8] Abhishek Goel, Abdelrahman Abubakr, Michal Koperski, Francois Bremond, and Gianpiero Francesca, "Online temporal detection of daily-living human activities in long untrimmed video streams"
3rd IEEE International Conference on Image Processing (IPAS), 2018

[9] Michal Koperski, Slawomir Bak, and Peter Carr, "Groups Re-identification with Temporal Context"
The ACM on International Conference on Multimedia Retrieval (ICMR), 2017

[10] Das Srijan, Michal Koperski, Francois Bremond, and Gianpiero Francesca, "Action Recognition based on a mixture of RGB and Depth based skeleton"
The 14th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), 2017

[11] Carlos Fernando Crispim-Junior, Michal Koperski, Serhan Cosar, and Francois Bremond, "Semi-supervised understanding of complex activities from temporal concepts"
The 13th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), 2016

[12] Michal Koperski and Francois Bremond, "Modeling Spatial Layout of Features for Real World Scenario RGB-D Action Recognition"
The 13th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), 2016

[13] Farhood F Negin, Serhan Cosar, Michal F Koperski, Carlos F Crispim-Junior, Konstantinos Avgerinakis, and Francois F Bremond, "A hybrid framework for online recognition of activities of daily living in real-world settings"
The 13th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), 2016

[14] F. Negin, S. Cogar, F. Bremond, and M. Koperski, "Generating unsupervised models for online long-term daily living activity recognition"
3rd IAPR Asian Conference on Pattern Recognition (ACPR), 2015

[15] Javier Ortiz, Slawomir Bak, Michal Koperski, and François Brémond, "Minimizing hallucination in Histogram of Oriented Gradients"
The 12th IEEE International Conference on Advanced Video and Signal-based (AVSS), 2015

[16] Piotr Bilinski, Michal Koperski, Slawomir Bak, and Francois Bremond, "Representing Visual Appearance by Video Brownian Covariance Descriptor for Human Action Recognition"
The 11th IEEE International Conference on Advanced Video and Signal-based (AVSS), 2014

[17] M. Koperski, P. Bilinski, and F. Bremond, "3D trajectories for action recognition"
The 21st IEEE International Conference on Image Processing (ICIP), 2014

PHD THESIS

[18] Michal Koperski. "Human Action Recognition in Videos with Local Representation". PhD thesis.
INRIA, University of Nice Sophia-Antipolis, Nov. 2017

BOOK CHAPTERS

[19] Jacek Jelonek Lukasz Kirchner Michal Koperski, *Distributed standalone mobile data providers for BirdWatch system*
NAKOM. 2011, ISBN: 978-83-89529-82-4