Ionut Cosmin Duta

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Summary

I am a fourth year PhD student in computer science under supervision of Prof. Nicu Sebe at the University of Trento, Italy. My research interests are computer vision, deep/machine learning, image and video content processing and analysis, multimedia. My present research activities are mainly concentrated on the task of human action recognition in videos, contributing to the community with research works, particularly focused on the descriptor extraction and feature encoding for creating an efficient and effective video representation. Besides the work at the University of Trento, I directly collaborated/collaborate with research groups from Carnegie Mellon University and University of Tokyo. Broadly, the main goal of my PhD thesis is to make a forward step towards teaching the computers to understand the videos similar as humans do.

Research Experience

05/2017-8/2017
Applied Scientist Intern at Amazon (Seattle, USA)
I worked on computer vision and machine learning tasks in Amazon Go team. Amazon Go is a new kind of store, which represents the world's most advanced shopping technology (https://www.amazon.com/go).

10/2015-04/2016
Visiting researcher at University of Tokyo (Tokyo, Japan)
I carried out research activities in the group of prof. Kiyoharu Aizawa on the human action recognition in videos.

03/2015-08/2015
Visiting researcher at Carnegie Mellon University (Pittsburgh, USA)
I performed research activities in the group of prof. Alexander G. Hauptmann on multimedia event detection / human action recognition task.

02/2013-06/2013
Research internship at University of Trento (Trento, Italy)
I worked in the group of prof. Nicu Sebe together with Jasper Uijlings on automatic object recognition.

Education

11/2013 – 11/2017(expected)
PhD student in Information and Communication Technology at the Department of Information Engineering and Computer Science, University of Trento, Italy (advisor prof. Nicu Sebe).

10/2011 – 09/2013
MSc in Computers and Information Technology at the Department of Electronics, Telecommunications and Information Technology, University Politehnica of Bucharest, Romania.
Master's thesis: *"Automatic classification of visual objects in image databases"*.

10/2011 – 07/2013
MSc in Computer Science at the Department of Mathematics and Computer Science, University of Pitesti, Romania.
Master's thesis: *"Large-scale image retrieval using an efficient description"*.

10/2008 – 07/2011
BSc in Computer Science at the Department of Mathematics and Computer Science, University of Pitesti, Romania.
Bachelor's thesis*: "Client-server architecture in Java using RMI, SSL and OpenJPA technologies"*.

Additional Research Activities
01/2017: *Amazon Graduate Research Symposium* (selected for presenting a poster)*,* Seattle, US.
08/2014: *Vision and Sports Summer School*, Prague, Czech Republic.
07/2014: *International Computer Vision Summer School*, Sicily, Italy.
11/2013 – present: enrolled in EIT (European Institute of Innovation and Technology) Digital Doctoral School and DTC (Doctoral Training Centre, Trento).
06/2012: *International Summer School on Multidimensional Signal Processing and Analysis,* Bucharest, Oradea and Brasov, Romania.
10/2008 – 07/2011: Computer Science Teaching course (obtained a certificate for teaching computer science).

Selected Relevant Publications

1. Duta, I.C.; Ionescu, B.; Aizawa, K. and Sebe, N. "Spatio-Temporal Vector of Locally Max Pooled Features for Action Recognition in Videos". In *Computer Vision and Pattern Recognition* (CVPR), 2017.
2. Duta, I.C.; Ionescu, B.; Aizawa, K. and Sebe, N. "Simple, Efficient and Effective Encodings of Local Deep Features for Video Action Recognition". In *International Conference on Multimedia Retrieval (ICMR),* 2017 (**oral presentation**).
3. Duta, I.C.; Uijlings, J.R.R.; Aizawa, K.; Hauptmann, A.G.; Ionescu, B. and Sebe, N. "Efficient Human Action Recognition using Histograms of Motion Gradients and VLAD with Descriptor Shape Information". In journal of *Multimedia Tools and Applications (MTAP),* 2017.
4. Duta, I.C.; Ionescu, B.; Aizawa, K. and Sebe, N. "Spatio-temporal VLAD Encoding for Human Action Recognition in Videos". In *International Conference on Multimedia Modeling* (MMM), 2017 (**oral presentation**). **Best paper candidate** (only 4 papers out of 107 accepted works were selected as best paper candidates).
5. Duta, I.C.; Nguyen, T.A.; Aizawa, K.; Ionescu, B. and Sebe, N. "Boosting VLAD with Double Assignment using Deep Features for Action Recognition in Videos". In *International Conference on Pattern Recognition* (ICPR), 2016 (**oral presentation**).
6. Duta, I.C.; Uijlings, J.R.R.; Nguyen, T. A.; Aizawa, K.; Hauptmann, A.G.; Ionescu, B. and Sebe, N. "Histograms of Motion Gradients for Real-time Video Classification" In *International Workshop on Content-based Multimedia Indexing* (CBMI), 2016 (**oral presentation**).

7. Mironica, I.; Duta, I.C.; Ionescu, B. and Sebe, N. "A modified vector of locally aggregated descriptors approach for fast video classification". In journal of *Multimedia Tools and Applications (MTAP)*, DOI: 10.1007/s11042-015-2819-7, 2016.
8. Mironica, I.; Duta, I.C.; Ionescu, B. and Sebe, N. "Beyond bag-of-words: Fast video classification with fisher kernel vector of locally aggregated descriptors". In *International Conference on Multimedia and Expo (ICME), 2015.*
9. Uijlings, J.R.R.; Duta, I.C.; Sangineto, E. and Sebe, N. "Video classification with Densely extracted HOG/HOF/MBH features: an evaluation of the accuracy/computational efficiency trade-off". In *International Journal of Multimedia Information Retrieval*, DOI: 10.1007/s13735-014-0069-5, 2015.
10. Uijlings, J.R.R; Duta, I.C.; Rostamzadeh, N. and Sebe, N. "Realtime video classification using dense HOF/HOG". In *International Conference on Multimedia Retrieval (ICMR)*, 2014 (**oral presentation**).

Reviewer Activities

IEEE Transactions on Multimedia.

Other contributions to the research community:
I was part of the organizing team of 2013 and 2014 Retrieving Diverse Social Images Task at the MediaEval Benchmarking Initiative for Multimedia Evaluation.

Programming skills

Matlab; C/C++; Java; Python; SQL.

Volunteering
01-06/2011: teaching computer courses for children with disabilities from the orphanage in Pitesti, Romania.
04/2007, 04/2008: participated at the social thematic contest "Defend Life with my Life" winning in both years, Pitesti, Romania.

Awards and Honors:

2017: Best paper candidate at International Conference on Multimedia Modeling
         (Only 3.7% of all accepted papers were nominated for best paper candidates).
2017: Travel scholarship from SIGMM to attend the ACM 50th celebration of the Turing Award, San Francisco, US.
2017: Travel grant for Amazon Graduate Research Symposium, Seattle, US.
2015: Erasmus Mundus Scholarship TEAM (6 months research activities at University of Tokyo).
2008: High school valedictorian (highest ranked student).

Additional Information

References:

1. Prof. Nicu Sebe
   University of Trento
   niculae.sebe@unitn.it

2. Prof. Kiyoharu Aizawa
   University of Tokyo
   aizawa@hal.t.u-tokyo.ac.jp