

Yuliya Tarabalka, PhD - Curriculum Vitae

Last name : **TARABALKA** First name : **Yuliya**

French citizen, born on 14/11/1984 in Ternopil, Ukraine

E-mail: yuliya.tarabalka@inria.fr

Web: <http://www-sop.inria.fr/members/Yuliya.Tarabalka>

Education

2010	PhD with European label	Signal and Image Processing, <i>Grenoble Institute of Technology (INPG), France</i>
	PhD joint degree with INPG	Electrical and Computer Engineering, <i>University of Iceland, Iceland</i>
		<i>Awarded: 14/06/2010, Dissertation: "Classification of Hyperspectral Data Using Spectral-Spatial Approaches"</i>
2007	MS with highest honors	Signal, Image, Speech Processing and Telecommunications, <i>INPG, France</i>
2006	Engineer with highest honors	Information & Computer Systems, <i>Ternopil State Technical University, Ukraine</i>
2005	BS with highest honors	Computer Sciences, <i>Ternopil State Technical University, Ukraine</i>

Research experience

2012-pres.	Research scientist, Inria Sophia Antipolis , France (TITANE project team)
2012	Post-doctoral researcher at Inria Sophia Antipolis and French Space Agency , France
2010-2011	Post-doctoral researcher at NASA Goddard Space Flight Center , Greenbelt, MD, USA
2007-2010	Researcher in the Marie Curie project "HYPER-I-NET" . Norwegian Defence Research Establishment, Norway (6 months). University of Iceland, Iceland (2 years). INPG, France (6 months)
2007-2008	Scientist at Norwegian Defence Research Establishment , Kjeller, Norway (6 months)
2007	Master Sc. project , GIPSA laboratory, Grenoble, France (5 months)
2003-2006	Research intern during engineering studies , Ternopil State Technical University, Ukraine

Supervised students

Emmanuel Maggiori	PhD student (classification of large-scale remote sensing data), since 2015
Chunlin Xiao	MS student (hierarchical segmentation of large-scale satellite images), 2016
Seong-Gyun Jeong	PhD student (curvilinear structure modeling), 2012-2015
Emmanuel Maggiori	MS student (optimizing partition trees for multi-object segmentation), 2014
Aakanksha Rana	MS student (graph-cut-based model for classification of hyperspectral images), 2016
Claudio Price Gonzalez	MS student (multitemporal segmentation of sea ice floes from satellite data), 2016
Kevin Bernard	MS student (stochastic MSF approach for classification of hyperspectral data), 2016

Teaching experience (> 500 hours)

2016-pres.	"Mathematical Methods," Ecole CentralSupélec, France
2015-pres.	"Advanced Algorithms," IUT Nice Côte d'Azur, France
2012-2015	"Digital Imaging," University of Nice Sophia-Antipolis, France
2013	"Spaceborn Sensors and their Applications," Ecole Nationale des Sciences Géographiques, France
2012	"Techniques for Statistical Data Analysis," Ecole Polytech Nice Sophia, France
2012	"Computer Vision," Ternopil National Technical University, Ukraine
2008-2010	"Image Processing," Grenoble Institute of Technology (INPG), France
2010	"Matlab for Image Processing," Grenoble Institute of Technology (INPG), France
2009	"Pattern Recognition," University of Iceland, Iceland
2009	"Mathematical Morphology," E-learning course, University of Iceland, Iceland
2002-2003	"Programming," "Web-Design," "CorelDraw," "Fundamentals of Computer Science," Regional Computer School, Ukraine

Main distinctions

- The top of the class in all study levels; graduated from the high school with the Gold Medal
- Prime d'encadrement doctoral et de recherche, awarded in 2016
- Best reviewer award of IEEE Transactions on Geoscience and Remote Sensing (best impact factor in RS), 2011
- Winner of the HYPER-I-NET summer school team contest "Evaluation of an unknown hyperspectral data set and information extraction" (team leader), 2009.

- Second rank in the best oral talk contest at the EARSeL conference, Israel, 2009
- Winner of the Ukrainian Cup-tie “KROKS” (national intellectual and sports contest), 2002
- Winner of the Regional student contests in computer science, Ukraine, 2000-2001.

Funding

- 2015-2017 - PI of the CNES R&T project “Hierarchical approaches for object-oriented classification of multi-source images”
- 2012 - CNES Research Fellowship
- 2011 - Co-I of the NASA ROSES 2011-AIST project “An advanced learning framework for high dimensional multi-sensor remote sensing data,” selected for funding in 2012-2014 (PI: M. Crawford, Purdue University, USA)
- 2010-2012 - NASA Postdoctoral Fellowship
- 2007-2010 - Marie Curie Research Fellowship
- 2006-2007 - Scholarship of the French Government
- 2004-2005 - Scholarship of the President of Ukraine and the Ukrainian Parliament

Professional service

- **Thesis committees:** Committee member for PhD thesis of A. Bohi, University of Toulon (2017)
- **Expert committees:** Member of the expert panel for the FWO funding programme (2016), evaluator for the AFIA prize (2013)
- **Co-Editor** of special issues for the journals Remote Sensing (2013-2014) and Sensing and Imaging (2015-2016)
- Member of 7 **program committees** for internat. conf.: ACIVS 2016, OSA Imaging Systems and Applications 2013, 2014, ISPRS 2012, ICPRAM 2012, SPIE 2011, IEEE WHISPERS 2009
- Member of the **organizing committee** for IEEE WHISPERS 2009, 2010
- Member of the “HYPER-I-NET” project management board, 2008-2010
- Reviewer for international scientific journals (IEEE Trans. Image Processing, IEEE Trans. Systems, Man, Cyb., IEEE TGRS, IEEE GRSL, Pattern Recogn., ...) and conferences (IEEE ICIP, ICASSP, IGARSS, GRETSI, ...)

Publications (62 articles, 2171 citations, h-index = 16)

Peer-reviewed international journals (16)

1. E. Maggiori, Y. Tarabalka, G. Charpiat, and P. Alliez, “Convolutional neural networks for large-scale remote sensing image classification,” *IEEE Trans. Geosc. Remote Sens.*, 2016.
2. H. Aghighi, J. Trinder, S. Lim and Y. Tarabalka, “Fully spatially adaptive smoothing parameter estimation for Markov random field super-resolution mapping of remotely sensed images,” *International Journal of Remote Sensing*, vol. 36, no. 11, pp. 2851-2879, 2015. **3 citations**
3. B. B. Damodaran, R. R. Nidamanuri and Y. Tarabalka, “Dynamic ensemble selection approach for hyperspectral image classification with joint spectral and spatial information,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 8, no. 6, pp. 2405-2417, 2015. **5 citations**
4. Y. Tarabalka, G. Charpiat, L. Brucker and B. H. Menze, “Spatio-temporal video segmentation with shape growth or shrinkage constraint,” *IEEE Transactions on Image Processing*, vol. 23, no. 9, pp. 3829-3840, 2014. **10 citations**
5. H. Aghighi, J. Trinder, Y. Tarabalka, and S. Lim, “Dynamic block-based parameter estimation for MRF classification of high-resolution images,” *IEEE GRSL*, vol. 11, no. 10, pp. 1687-1691, 2014. **11 citations**
6. M. Fauvel, Y. Tarabalka, J. A. Benediktsson, J. Chanussot, and J. C. Tilton, “Advances in spectral-spatial classification of hyperspectral images,” *Proceedings of the IEEE*, vol. 101, no. 3, pp. 652-675, March 2013. **323 citations**
7. J. C. Tilton, Y. Tarabalka, P. M. Montesano, and E. Gofman, “Best merge region growing with integrated region object classification,” *IEEE Trans. Geosc. Remote Sens.*, vol. 50, no. 11, pp. 4454-4467, Nov. 2012. **62 citations**
8. K. Bernard, Y. Tarabalka, J. Angulo, J. Chanussot, and J. A. Benediktsson, “Spectral-spatial classification of hyperspectral data based on a stochastic minimum spanning forest approach,” *IEEE Trans. on Image Processing*, vol. 21, no. 4, pp. 2008-2021, April 2012. **76 citations**
9. Y. Tarabalka, J. C. Tilton, J. A. Benediktsson, and J. Chanussot, “A marker-based approach for the automated selection of a single segmentation from a hierarchical set of image segmentations,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 5, no. 1, pp. 262-272, Feb. 2012. **51 citations**
10. Y. Tarabalka, J. A. Benediktsson, J. Chanussot, and J. C. Tilton, “Multiple spectral-spatial classification approach for hyperspectral data,” *Trans. Geosc. Remote Sens.*, vol. 48, no. 11, pp. 4122-4132, Nov. 2010. **166 citations**
11. Y. Tarabalka, M. Fauvel, J. Chanussot, J. A. Benediktsson, “SVM and MRF-based method for accurate classification of hyperspectral images,” *IEEE GRSL*, vol. 7, no. 4, pp. 736-740, Oct. 2010. **291 citations**

12. Y. Tarabalka, J. Chanussot, and J. A. Benediktsson, "Segmentation and classification of hyperspectral images using Minimum Spanning Forest grown from automatically selected markers," *IEEE Trans. on Systems, Man, and Cybernetics, Part B: Cybernetics*, vol. 40, no. 5, pp. 1267-1279, Oct. 2010. **136 citations**
13. Y. Tarabalka, J. Chanussot, and J. A. Benediktsson, "Segmentation and classification of hyperspectral images using watershed transformation," *Pattern Recognition*, vol. 43, no. 7, pp. 2367-2379, July 2010. **266 citations**
14. P. Badin, Y. Tarabalka, F. Elisei, G. Bailly, "Can you 'read' tongue movements? Evaluation of the contribution of tongue display to speech understanding," *Speech Communication*, no. 52, pp. 493-503, 2010. **57 citations**
15. Y. Tarabalka, J. A. Benediktsson, and J. Chanussot, "Spectral-spatial classification of hyperspectral imagery based on partitional clustering techniques," *IEEE Trans. Geosc. Remote Sens.*, vol. 47, no. 8, pp. 2973-2987, 2009. **366 citations**
16. Y. Tarabalka, T. V. Haavardsholm, I. Kåsen, and T. Skauli, "Real-time anomaly detection in hyperspectral images using multivariate normal mixture models and GPU processing," *Journal of Real-Time Image Processing*, vol. 4, no. 3, pp. 287-300, Aug. 2009. **88 citations**

Book chapters (3)

1. E. Maggiori, A. Plaza and Y. Tarabalka, "Models for hyperspectral image analysis: from unmixing to object-based classification," *Mathematical Models for Remote Sensing Image Processing* (edit. by G. Moser and J. Zerubia), in print.
2. J. Tilton, S. Aksoy and Y. Tarabalka, "Image segmentation algorithms for land categorization," *Remote Sensing Handbook* (edited by P. S. Thenkabail), Taylor and Francis, 2015.
3. Y. Tarabalka, J. Chanussot, and J. A. Benediktsson, "Spectral-spatial classification of hyperspectral images using segmentation-derived adaptive neighborhoods," *Multivariate Image Processing* (edited by C. Collet, J. Chanussot, and K. Chehdi), John Wiley & Sons, 2009, pp. 341-374.

International conferences (Selected from 34)

1. E. Maggiori, Y. Tarabalka, G. Charpiat and P. Alliez, "Fully convolutional neural networks for remote sensing image classification," *IGARSS'16*, Beijing, China, 2016.
2. E. Maggiori, Y. Tarabalka and G. Charpiat, "Optimizing partition trees for multi-object segmentation with shape prior," *BMVC'2015*, Swansea, UK, 2015.
3. S-G. Jeong, Y. Tarabalka and J. Zerubia, "Stochastic model for curvilinear structure reconstruction using morphological profiles," *IEEE ICIP'15*, Quebec City, Canada, 2015.
4. E. Maggiori, Y. Tarabalka and G. Charpiat, "Improved partition trees for multi-class segmentation of remote sensing images," *IGARSS'15*, Milan, Italy, 2015.
5. S-G. Jeong, Y. Tarabalka and J. Zerubia, "Marked point process model for curvilinear structures extraction," *EMM-CVPR'15*, Hong Kong, 2015.
6. S-G. Jeong, Y. Tarabalka and J. Zerubia, "Marked point process model for facial wrinkle detection," *IEEE ICIP'14*, Paris, France, 2014.
7. Y. Tarabalka and A. Rana, "Graph-cut-based model for spectral-spatial classification of hyperspectral images," *IGARSS'14*, Quebec City, Canada, 2014.
8. Y. Tarabalka, G. Charpiat, L. Brucker and B. H. Menze, "Enforcing monotonous shape growth or shrinkage in video segmentation," *BMVC'2013*, Bristol, UK, 2013.
9. Y. Tarabalka and G. Charpiat, "A graph-cut-based method for spatio-temporal segmentation of fire from satellite observations," *IGARSS'13*, Melbourne, Australia, 2013.
10. Y. Tarabalka, L. Brucker, A. Ivanoff and J. C. Tilton, "Shape-constrained segmentation approach for Arctic multiyear sea ice floe analysis," *IGARSS'12*, Munich, Germany, 2012.
11. Y. Tarabalka and J. Tilton, "Improved hierarchical optimization-based classification of hyperspectral images using shape analysis," *IGARSS'12*, Munich, Germany, 2012.
12. Y. Tarabalka and J. C. Tilton, "Spectral-spatial classification of hyperspectral images using hierarchical optimization," *WHISPERS'11*, Lisbon, Portugal, 2011.
13. Y. Tarabalka, J. C. Tilton, J. A. Benediktsson and J. Chanussot, "Marker-based hierarchical segmentation and classification approach for hyperspectral imagery", *ICASSP'11*, Czech Republic, 2011.
14. K. Bernard, Y. Tarabalka, J. Angulo, J. Chanussot, and J. A. Benediktsson, "A stochastic minimum spanning forest approach for spectral-spatial classification of hyperspectral images," *ICIP'11*, Brussels, Belgium, 2011.
15. Y. Tarabalka and J. C. Tilton, "Best merge region growing with integrated probabilistic classification for hyperspectral imagery," *IGARSS'11*, Vancouver, Canada, 2011.
16. Y. Tarabalka, J. A. Benediktsson, J. Chanussot and J. C. Tilton, "A multiple classifier approach for spectral-spatial classification of hyperspectral data," in Proc. of *IGARSS'10*, Honolulu, Hawaii, USA, 2010, pp. 1410-1413.
17. Y. Tarabalka, J. Chanussot, J. A. Benediktsson, "Classification of hyperspectral images using automatic marker selection and Minimum Spanning Forest," in Proc. of *IEEE WHISPERS'09*, Grenoble, France, 2009, pp. 1-4.
18. Y. Tarabalka, J. Chanussot, J. A. Benediktsson, "Classification based marker selection for watershed transform of hyperspectral images," in Proc. of *IGARSS'09*, Cape Town, South Africa, 2009, pp. III-105-III-108.
19. Y. Tarabalka, J. Chanussot, J. A. Benediktsson, J. Angulo, and M. Fauvel, "Segmentation and classification of hyperspectral data using watershed," in Proc. of *IGARSS'08*, Boston, USA, 2008, pp. III-652-III-655.
20. Y. Tarabalka, T. V. Haavardsholm, I. Kåsen, and T. Skauli, "Parallel processing for normal mixture models of hyperspectral data using a graphics processor," in Proc. of *IGARSS'08*, Boston, USA, 2008, pp. II-990-II-993.
21. P. Badin, Y. Tarabalka, F. Elisei, and G. Bailly, "Can you 'read tongue movements'?", in Proc. of *Interspeech 2008*, Brisbane, Australia, 2008, pp. 2635-2638.