

Yuliya Tarabalka - Curriculum Vitae

CONTACT INFORMATION	GIPSA-Lab Grenoble Institute of Technology BP 46 38402 Saint Martin d'Hères FRANCE	<i>Tel. (France):</i> (336) 669-57275 <i>Tel. (Iceland):</i> (354) 844-7306 <i>E-mail:</i> yuliya.tarabalka@hyperinet.eu <i>WWW:</i> http://www3.hi.is/%7eyut2/
PERSONAL	Born on November 14, 1984 Ukrainian Citizen	
RESEARCH INTERESTS	Image analysis and signal processing, machine learning, remote sensing, imaging spectroscopy, high-performance computing	
EDUCATION	University of Iceland , Reykjavik, Iceland Ph.D., Electrical and Computer Engineering (expected graduation date: June 2010) <ul style="list-style-type: none">• Thesis Topic: Spectral-Spatial Classification in Hyperspectral Imagery• Advisor: Professor Jón Atli Benediktsson Grenoble Institute of Technology , Grenoble, France Ph.D., Signal and Image Processing (expected graduation date: June 2010) <ul style="list-style-type: none">• Co-tutoring with the University of Iceland• Thesis Topic: Spectral-Spatial Classification in Hyperspectral Imagery• Advisor: Professor Jocelyn Chanussot M.S., Signal, Image, Speech Processing and Telecommunications, July 2007 <ul style="list-style-type: none">• <i>With Honors</i> (first rank in the Doctoral School EEATS)• Thesis Topic: Perceptive Evaluation of the Contribution of Tongue Display to Speech Understanding• Advisors: Pierre Badin and Gérard Bailly Ternopil State Ivan Pul'uj Technical University , Ternopil, Ukraine Engineer of Computer Systems, July 2006 <ul style="list-style-type: none">• <i>With Honors</i>• Specialization: Information Controls Systems and Technologies B.S., Computer Sciences, July 2005 <ul style="list-style-type: none">• <i>With Honors</i>• Emphasis on Computer Information Systems and Program Engineering	
ACADEMIC EXPERIENCE	University of Iceland , Reykjavik, Iceland <i>Teaching Assistant</i> July 2009 to present <ul style="list-style-type: none">• Develops and lectures Pattern Recognition graduate course, 6 credits• Developed and implemented E-learning course of Mathematical Morphology (in the frame of "HYPER-I-NET" project), 2 hours	

Doctorate (PhD) student **January 2008 to present**

- Early-stage researcher in the framework of the Hyperspectral Imaging Network “HYPER-I-NET” (Marie Curie Research Training Network)
Develops and implements advanced methods and algorithms for hyperspectral image analysis and classification

Grenoble Institute of Technology, Grenoble, France

Teaching Assistant **December 2008 to present**

- Lectured laboratory on Image Processing, 48 hours

Doctorate (PhD) student **October 2007 to present**

- Early-stage researcher in the framework of the Hyperspectral Imaging Network “HYPER-I-NET”

M.S. student **September 2006 to July 2007**

- Conducted research on the evaluation of the contribution of tongue display to speech understanding

Norwegian Defence Research Establishment (FFI), Kjeller, Norway

Scientist **July 2007 to January 2008**

- Developed methods and software for hyperspectral image analysis, involving the use of multiprocessor architectures

Ternopil State Ivan Pul’uj Technical University, Ternopil, Ukraine

Researcher **February 2003 to August 2006**

- Designed simulations of physical processes using personal computer
- Conducted research on the Internet-traffic analysis by using functional transformations

Regional Computer School, Ternopil, Ukraine

Teacher **September 2002 to January 2003**

- Developed a set of lectures for the Web-design course
- Conducted lectures and lab sessions (Courses: Programming, Web-design, Graphics Program “CorelDraw”, Fundamentals of Computer Science), 150 hours

AWARDS & SCHOLARSHIPS

- Winner of the HYPER-I-NET summer school student 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 6th EARSeL SIG IS workshop, Tel Aviv, Israel, 2009
- Graduate Studies Scholarship of the French Government, 2006-2007
- Scholarship of the Verkhovna Rada of Ukraine (Ukrainian Parliament), 2005
- Scholarship of the President of Ukraine, 2004
- Ternopil State Ivan Pul’uj Technical University Scholarship, 2001-2004
- Participant and winner of the Ukrainian Student Contests in Computer Sciences, 2003, 2004, 2005
- Winner of the 7th Ukrainian Cup-tie “KROKS” (team intellectual and sports contest), 2002
- Winner of the Ternopil State Ivan Pul’uj Technical University Olympiad named after O. Smakula, 2001
- Winner of the Ternopil Regional Computer School Olympiad in Computer Sciences, 2000

Papers in Referred International Journals (5)

1. 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*, under review.
2. Y. Tarabalka, J. Chanussot, and J. A. Benediktsson, "Segmentation and classification of hyperspectral images using watershed transformation," *Pattern Recognition*, under review.
3. 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*, under review.
4. Y. Tarabalka, J. A. Benediktsson, and J. Chanussot, "Spectral-spatial classification of hyperspectral imagery based on partitional clustering techniques," *IEEE Trans. on Geoscience and Remote Sensing*, vol. 47, no. 8, pp. 2973-2987, Aug. 2009.
5. 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.

Papers in National Journals (2)

1. P. Badin, F. Elisei, G. Bailly, C. Savariaux, A. Serrurier, and Y. Tarabalka, "Virtual audiovisual talking heads: articulatory data and models - applications," *Revue de Laryngologie Otologie Rhinologie*, vol. 128, no. 5, pp. 289-295, 2007 (*in French*).
2. Y. Tarabalka, M. Fryz, "Internet-traffic analysis by using non-linear transformations," *Measuring and computer techniques in the technological procedures*, Khmelnytsky: Edit. of the Technological University of Podillia, 2006 (*in Ukrainian*).

Book Chapters (1)

1. 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. Chendi), ISTE Ltd, Great Britain, to appear in 2009.

International Conference Papers (14)

1. J. Chanussot, J. A. Benediktsson, M. Fauvel, Y. Tarabalka, "Spectral-spatial analysis in hyperspectral remote sensing: from morphological profiles to classified segmentation," in Proc of *SPIE*, Vol. 7477, 2009.
2. 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.
3. 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.
4. Y. Tarabalka, J. A. Benediktsson, and J. Chanussot, "Classification of hyperspectral data using Support Vector Machines and adaptive neighborhoods," in Proc. of *the 6th EARSeL SIG IS workshop*, Tel Aviv, Israel, 2009.

5. 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.
6. 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.
7. T. Skauli, I. Kåsen, T. Haavardsholm, A. Kavara, Y. Tarabalka, and Ø. Farsund, "Status of the norwegian hyperspectral technology demonstrator," in Proc. of *NATO SET-130 "NATO Military sensing symposium"*, Orlando, Florida, USA, 2008, pp. F5-1-F5-6.
8. P. Badin, F. Elisei, G. Bailly, and Y. Tarabalka, "An audiovisual talking head for augmented speech generation: models and animations based on a real speaker's articulatory data," In *Vth Conference on Articulated Motion and Deformable Objects* (F.J. Perales & R.B. Fisher, Eds.), Berlin , Heidelberg , Germany : Springer Verlag, 2008, pp. 132-143.
9. P. Badin, F. Elisei, L. Huang, Y. Tarabalka, and G. Bailly, "Vision of tongue in augmented speech: contribution to speech comprehension and visual tracking strategies," in *Speech and Face-to-Face communication - A workshop / Summer School dedicated to the Memory of Christian Benoit*, Grenoble, France, 2008, pp. 97.
10. 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.
11. Y. Tarabalka, P. Badin, F. Elisei, and G. Bailly, "Can you "read tongue movements"? Evaluation of the contribution of tongue display to speech understanding," in Proc. of *ASSISTH'2007*, Toulouse, France, 2007, pp. 187-193.
12. Y. Tarabalka, "Information system for audio-visual speech reproduction and perception," in Proc. of the *International technological conference "Information systems and technologies - IST-2007"*, Nizhny Novgorod, NSTU, Russia, 2007 (*in Russian*).
13. Y. Tarabalka, "Properties of the use of automatic speech recognition for the design of biotechnical systems," in Proc. of the *International technological conference "Information systems and technologies - IST-2006"*, Nizhny Novgorod, NSTU, Russia, 2006, p. 152-153 (*in Russian*).
14. Y. Tarabalka, "Histogram analysis of the aggregate Internet-traffic by using non-linear transformations," in Proc. of the *International scientific conference for students and young researchers "Polit-2006"*, NAU, Kyiv, Ukraine, 2006, p. 18 (*in Ukrainian*).

National Conference Papers (7)

1. Y. Tarabalka, P. Badin, F. Elisei, and G. Bailly, "Can one read tongue movements? Evaluation of the contribution of tongue display to speech understanding", In *2èmes Journées de Phonétique Clinique*, Grenoble, France, 2007 (*in French*).
2. Y. Tarabalka, M. Fryz, "Analysis of the Internet-traffic distribution by using Pearson curves," in Proc. of the *Russian technological conference*, Nizhny Novgorod, Russia, NNIMC "Dialog", 2006, p. 7 (*in Russian*).
3. Y. Tarabalka, M. Fryz, "Internet-traffic analysis using non-linear transformations," in Proc. of the *IX Scientific Conference of TSTU named after Ivan Pul'uj*, Ternopil, Ukraine, 2005, p. 66 (*in Ukrainian*).

4. Y. Tarabalka, "Application package for digital signal processing," in Proc. of the VII Student Scientific Conference of TSTU named after Ivan Pul'uj, Ternopil, Ukraine, 2004, p. 106 (in Ukrainian).
5. N. Korovina, Y. Tarabalka, "Modelling of Thermal Processes in Substances as a Result of Laser Processing," in Proc. of the VII Student Scientific Conference of TSTU named after Ivan Pul'uj, Ternopil, Ukraine, 2004, p. 157 (in Ukrainian).
6. Y. Tarabalka, N. Korovina, "Simulation of Brownian Motion and its Analysis", in Proc. of the IV Ukrainian Student Scientific Conference, SevNTU, Sevastopol, Ukraine, 2003, pp. 53-54 (in Ukrainian).
7. Y. Tarabalka, N. Korovina, "Analysis of Brownian Motion using simulation procedure," in Proc. of the VI Student Scientific Conference of TSTU named after Ivan Pul'uj, Ternopil, Ukraine, 2003, p. 69 (in Ukrainian).

PROFESSIONAL
EXPERIENCE

"MELVIS", Ternopil, Ukraine

Programmer

May 2002 to August 2002

- Designed software tools for enterprise accounting

SCIENTIFIC
SOFTWARE

HyperClas, a software for analysis, segmentation and classification of hyperspectral data (2009)

PROFESSIONAL
SERVICE

Review work, 2008 to present:

Journals:

- IEEE Transactions on Image Processing
- IEEE Transactions on Geoscience and Remote Sensing
- IEEE Geoscience and Remote Sensing Letters
- Journal of Real-Time Image Processing
- Journal of Applied Remote Sensing
- Journal of Zhejiang University- Science A

Conferences:

- First Workshop on Hyperspectral Image and Signal Processing (IEEE WHISPERS'09)
- IEEE International Geoscience and Remote Sensing Symposium 2009 (IEEE IGARSS'09)
- IEEE International Geoscience and Remote Sensing Symposium 2008 (IEEE IGARSS'08)
- European Signal Processing Conference 2008 (EUSIPCO 2008)

Organizing Committee of the IEEE WHISPERS'09, 2009

Session chair for the conferences:

- IEEE WHISPERS'09: *High performance computing, efficient implementation, software*
- IEEE IGARSS'09: *Kernel-Based Feature Extraction and Classification*
- IEEE IGARSS'08: *Hyperspectral: Compression and Implementation*

Early Stage Researchers/Experienced Researchers representative in the "HYPER-I-NET" Management Board, April 2008 to present

Member of Professional Societies, 2008 to present:

- Student Member, the Institute of Electrical and Electronics Engineers, Inc. (IEEE)
- Student Member, IEEE Geoscience and Remote Sensing Society
- Student Member, IEEE Women In Engineering

TECHNICAL SKILLS Design of software systems; C++, Pascal, Object Pascal, Visual C, CUDA, Assembler, Matlab, SQL programming languages; ENVI; Web-design (using ASP.NET technology); CAD software; computer hardware, software and network installations

LANGUAGES Ukrainian (native)

Russian (native)

English (TOEFL score: 277/ 300; essay: 5.0/6.0)

French (course of the CUEF, Stendal University of Grenoble, B2 level - independent, GPA : 17.6/ 20.0)

Icelandic (basic level)

Spanish (basic level)

Norwegian (basic level)