Curriculum Vitae

Apostolos Georgakis

Contact Information

Office address

Multimedia Technologies
Ericsson Research
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Kolsnarsvägen 21,
SE-12051, Stockholm, Sweden

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Research Interests

Video compression (3D), signal processing, multimedia search engines, machine learning, pattern recognition, data mining.

Education

Umeå University, Sweden

Doctor of Philosophy (Ph.D.) in Computing Science, Apr. 2004
Dissertation Topic: "Textual information retrieval: An approach based on language modeling and neural networks." Advisor: Prof. Haibo Li

Aristotle University, Thessaloniki, Greece

Bachelor of Science (B.Sc.) in Mathematics, (GPA: 7.2/10), Sep. 1998

Professional Experience

Senior researcher **Sep. 2010 - now**
Multimedia Technologies, Ericsson Research, Sweden.

Research engineer **Jan. 2008 - Aug. 2010**
Multimedia Technologies, Ericsson Research, Sweden.

Assistant professor **Apr. 2005 - Dec. 2007**
Dept. Applied Physics and Electronics, Umeå University, Sweden.

Postdoctoral researcher **Sep. 2004 - Mar. 2005**
Digital Media Laboratory, Dept. Applied Physics and Electronics, Umeå University, Sweden.

Project assistant & Ph.D. student **Jan. 2003 - Aug. 2004**
Digital Media Laboratory, Dept. Applied Physics and Electronics, Umeå University, Sweden.

Ph.D. student **Jan. 1999 - Dec. 2002**
Artificial Intelligence and Information Analysis Laboratory, Dept. Informatics, Aristotle University, Greece.

Professional Activities and Affiliations

Scientific membership
IEEE (2002-now), ACM (2007-now), IASTED (2006-now)

Standardization bodies
MPEG (2009 - now)

Journal refereeing
DAMI (2009), TrNN (2009), TiFS (2009 - 2010)

Conference refereeing
IMSA (2009), ICSPC (2007), SSBA (2006, 2007), ICIP (2001)

Ericsson Research, Sweden
Research engineer & Senior researcher **Jan. 2008 - now**
Face detection and recognition (FD & FR), image and video signatures, media annotation, 3D video compression, view synthesis.

Umeå University, Sweden
Researcher **Jan. 2003 - Dec. 2007**
Artificial neural networks, multimedia search engines.

Study program organizer **2006 - 2007**
Member in the steering group for the Interactive System Engineering (iSE) Master program for the Dept. of Applied Physics and Electronics.

Aristotle University, Greece
Researcher **Jan. 1999 - Dec. 2002**
Artificial neural networks, statistical language processing.

Publications

Peer review journal papers

1. **A. Georgakis** and H. Li, User behaviour modeling and content based speculative web page retrieval, Data & Knowledge Engineering, vol. 59, pp. 770–788, 2006.
2. M. Gordan, C. Miron, I. Stoian, **A. Georgakis** and O. Dancea, A vision-based fuzzy expert system for the surveillance and diagnosis of hydro dams using underwater color image analysis, ACTA TEHNICA NAPOCENSIS Electronics and Telecommunications, vol. 46, no. 2, pp. 41–48, 2005.
3. **A. Georgakis**, C. Kotropoulos, A. Xafopoulos and I. Pitas, Marginal median WEBSOM for information organization and retrieval, Neural Networks, vol. 17, pp. 365–377, 2004.

Peer review conference papers

1. **A. Georgakis**, Part-of-speech tagging for client-side link prefetching, CD-ROM Proc. of IASTED Int. Conf. on Internet and Multimedia Systems and Applications (EuroIMSA'07), Chamonix, France, March 2007.
2. M. Gordan, Q. Dancea, I. Stoian, **A. Georgakis** and O. Tsatos, A New SVM-Based Architecture for Object Recognition in Color Underwater Images with Classification Refinement by Shape Descriptors, Proc. of IEEE-TTTC Int. Con. on Automation, Quality and Testing, Robotics (A&QT-R'06), pp. 327–332, Cluj-Napoca, Romania, May 2006.
3. M. Gordan, **A. Georgakis**, O. Tsatos, G. Oltean and L. Miclea, Computational Complexity Reduction of the Support Vector Machine Classifiers for Image Analysis Tasks Through the Use of the Discrete Cosine Transform, Proc. of IEEE-TTTC Int. Con. on Automation, Quality and Testing, Robotics (A&QT-R'06), pp. 350–355, Cluj-Napoca, Romania, May 2006.
4. **A. Georgakis** and H. Li, Content based image retrieval using a bootstrapped SOM network, Proc. of 3rd Int. Sym. on Neural Networks (ISNN'06), pp. 595–601, Chengdu, China, May 2006.
5. **A. Georgakis**, H. Li and M. Gordan, Behavior modeling using bigram frequencies for client-side link prefetching, CD-ROM Proc. of IASTED Int. Conf. on Internet and Multimedia

Systems and Applications (EuroIMSA'06), Innsbruck, Austria, February 2006.

6. **A. Georgakis**, H. Li and M. Gordan, An ensemble of SOM networks for document organization and retrieval, Proc. of Int. Conf. on Adaptive Knowledge Representation and Reasoning (AKRR'05), pp. 141–147, Espoo, Finland, June 2005.
7. **A. Georgakis** and H. Li, A SOM variant for heavily skewed vectors, Proc. of Int. Conf. on Adaptive Knowledge Representation and Reasoning (AKRR'05), pp. 41–48, Espoo, Finland, June 2005.
8. **A. Georgakis** and H. Li, Web documents pre-fetching based on an ensemble of classifiers, Proc. of IASTED Int. Conf. on Internet and Multimedia Systems and Applications (EuroIMSA'05), Grindelwald, Switzerland, February 2005.
9. M. Gordan, C. Miron and **A. Georgakis**, An optimal feature selection strategy for fuzzy *c*-means. Application to lip-to-skin discrimination, Proc. of IEEE-TTTC Int. Con. on Automation, Quality and Testing, Robotics (A&QT-R'04), pp. 129–134, Cluj-Napoca, Romania, May 2004.
10. **A. Georgakis**, C. Kotropoulos and I. Pitas, A combination of R-estimates and Wilcoxon test for document organization and retrieval, CD-ROM Proc. of IEEE-EURASIP Workshop Nonlinear Signal and Image Processing, Grado - Gorizia, Italy, June 2003.
11. **A. Georgakis**, C. Kotropoulos, and I. Pitas, A SOM variant based on the Wilcoxon test for document organization and retrieval, Proc. of Int. Conf. Artificial Neural Networks (ICANN'02), pp. 993–998, Madrid, Spain, August 2002.
12. M. Gordan, C. Kotropoulos, **A. Georgakis**, I. Pitas, A new fuzzy *c*-means based segmentation strategy. Applications to lip region identification, Proc. of IEEE-TTTC Int. Con. on Automation, Quality and Testing, Robotics (A&QT-R'02), pp. 23–28, Cluj-Napoca, Romania, May 2002.
13. **A. Georgakis**, C. Kotropoulos, A. Xafopoulos and I. Pitas, Document organization and retrieval using SOM's and statistical language modeling, Proc. of ICEIS Conf. Pattern Recognition in Information Systems (PRIS'01), pp. 149–160, Setubal, Portugal, July 2001.
14. **A. Georgakis**, C. Kotropoulos, A. Xafopoulos and I. Pitas, MM-WEBSOM: A variant of WEBSOM based on order statistics, CD-ROM Proc. of IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing, Baltimore, U.S.A., June 2001.
15. **A. Georgakis**, C. Kotropoulos, N. Bassiou and I. Pitas, Hypergeo: A data organization and retrieval system for tourist information, Proc. of IASTED Conf. on Applied Informatics, pp. 719–724, Innsbruck, Austria, February 2001.

Non-reviewed papers

1. M. E. Osadebey and **A. Georgakis**, Fully robust spread spectrum wavelet watermarking system, Proc. of Swedish Society for Automated Image Analysis (SSBA'07), pp. 137–140, Linköping, Sweden, March, 2007.
2. **A. Georgakis**, L. H. Sun, J. -P. Kouma, R. Cabral and H. Li, WWW.WAWO.NET: A CBIR for facial similarities, Proc. of Swedish Society for Automated Image Analysis (SSBA'07), pp. 125–128, Linköping, Sweden, March, 2007.
3. **A. Georgakis**, M. E. Osadebey and H. Li, Combining texture, shape and spatial information for image retrieval, Proc. of Swedish Society for Automated Image Analysis (SSBA'06), pp. 41–44, Umeå Sweden, March, 2006.
4. M. Gordan and **A. Georgakis**, A novel fuzzy edge detection and classification scheme to aid hydro-dams surface examination, Proc. of Swedish Society for Automated Image Analysis (SSBA'06), pp. 121–124, Umeå Sweden, March, 2006.

5. **A. Georgakis**, C. Kotropoulos, and I. Pitas, Organization and retrieval of tourist content information using statistical language processing techniques, Proc. of 21st Annual Glossology Sector Meeting of the Philosophical Department of the Aristotle University of Thessaloniki, pp. 110–120, Thessaloniki, Greece, July 2001.

Technical reports

1. **A. Georgakis** and H. Li, "Web prefetching through automatic categorization", DML-TR-2004:04, Umeå University, 2004.
2. A. A.-Hamam and H. Li and **A. Georgakis**, "Understanding Web Users Behaviour From A Web Video Camera", DML-TR-2003:02, Umeå University, 2003.
3. **A. Georgakis** and H. Li, "Document distances using the Zipf distribution and a novel metric", DML-TR-2003:01, Umeå University, 2003.

Patent applications (submitted in USPTO & EPO)

Sole inventor: 4
Co-inventor: 3

Research Activities

Ericsson Research

- Consider8: Data mining on human mobility paterns, Jan. 2010 - now.
- 3D VISION: Compression and transportation of 3D video, Sep. 2009 - Dec. 2010.
- GRANDMA: Computer graphics and media analysis, Jan. 2008 - Aug. 2009.

EU projects

- ImDigger: an experimental test-bed system for research on CBIR.
- wawo.net: content-based search engine for facial images.
- MUHCI: Multi-modal Human Computer Interaction, HPRN-CT-2000-00111, Jan. 2000 - Dec. 2004.
- HYPERGEO: Easy and friendly access to geographic information for mobile users, IST-1999-11641, Jan. 2000 - Dec. 2002.

Greek Secretariat for Research and Technology projects

- Distance: Distance education, 1999 - 2001.

Development Projects

- wawo.net: A facial search engine, 2006-2007.
- Web document pre-fetching evaluation suite, MUHCI project, HPRN-CT-2000-00111, 2005.
- NLRAC: Natural language request analysis component, HYPERGEO project, IST-1999-11641, 2003.

Dissertation opponent

Licenciate

1. L. Karlsson, Spatio-temporal pre-processing methods for region-of-interest video coding, Dept. of Information Technology and Media, Mid Sweden University, Apr. 2007.

Scientific Supervisor

Graduate level

Master of science (M.Sc.)

1. A. Olofsson, *Depth estimation in stereo and multi-view sequences*, 30ects, 2010.
2. M. Junered, *Face recognition in mobile devices*, 30ects, 2009.
3. K. A. Khan, *A transparent agent for context-aware web based searches*, 30ects, 2006.
4. D. R. Manda, *A study on anonymous P2P networks and their vulnerabilities*, 15ects, 2006.
5. M. Castro, *MPEG-4 style object-based codec with MATLAB*, 15ects, 2006.

6. M. Osademic, *Content based image retrieval using texture, shape and spatial information*, 30ects, 2005.

Dev. project

1. K. Reddy, *Video shot-cut detection*, 15ects, 2006–2007.
2. L. Kumar, *Over-the-top audio encryption for mobile phones*, 15ects, 2006.
3. M. Osademic, *Fully robust spread spectrum wavelet watermarking and cryptographic system*, 15ects, 2006.
4. A. Naeem and S. A. Shahzad, *The analysis of securities, protocols and other issues with P2P networks*, 15ects, 2004.
5. W. Ali, *Features in content based image retrieval: A survey*, 15ects, 2004.

Degree project

1. M. Hedenstedt, *Music discovery engine*, 30ects, 2006–2007.
2. S. Mohamed, *MPEG-4 object based video encoding: A survey*, 30ects, 2006–2007.

Teaching Experience

Umeå University, Sweden

Undergraduate level

- Digital Vision: A C-level course in machine vision topics (7.5ects)
- Image compression: A C/D level course that deals with image compression issues (7.5ects)

Master level

- Media signal processing: A D-level course in advanced signal processing (15ects)
- Interactive system projects: A D-level course in project management (7.5ects)
- System engineering: A D-level course in engineering project management (7.5ects)
- Video compression: A D-level course in video compression algorithms and standards (15ects)

Ph.D. level

- Multimedia data mining: A D-level course in multimedia information retrieval techniques (15ects)
- Statistical signal processing: A D-level course in statistical tools for signal modeling (10.5ects)

Aristotle University of Thessaloniki, Greece

- Applied statistics [98-00, 01-02]
- Combinatorial mathematics [99-01]
- Computational mathematics [98-02
- Digital signal processing [01-02]
- Mathematical programming [99-02]
- Mathematical statistics [98-99, 00-01]
- Non-linear optimization methods [01-02]
- Sampling theory [00-01]
- Stochastic operational research [98-99]

Computer Skills

- Mathematical software: Matlab, Maple, Mathematica, Octave and Scilab.
- Statistical packages: R, S-Plus and SPSS.
- Programming languages: C/C++, Python, PHP, Java and OpenGL.
- Operating systems: GNU/Linux and Windows.
- Libraries: Intel IPP and OpenCV, LAPACK.
- Other: LaTeX, HTML5, CSS.

Language Skills

- Greek - Native language
- English - Excellent level (Proficiency)
- German - Adequate level (Grundstuffe)
- Swedish - Adequate level

Honors and Awards

- Swedish Society for Automated Image Analysis, 2006: Best industrial scientific paper award. Title: *A novel fuzzy edge detection and classification scheme to aid Hydro-Dams surface examination*.
- Polish Science Academy, 1993: Honorable mention for the first International Competition "First step to Nobel Prize in Physics". Title: *The Thermonuclear Future*.