Computational Biomedicine Lab
Dept. Computer Science, University of Houston, TX
email: gevangel@central.uh.edu
web: cbl.uh.edu/~gevag

Georgios Evangelopoulos

Education

2002–2007 **Ph.D., Electrical & Computer Engineering**, *National Technical University of Athens*, Greece, *Research field*: Image Analysis and Computer Vision.
Courses: Partial Differential Equations, Ordinary Differential Equations & Dynamical Systems, Stochastic Optimization, Non-linear Systems (Chaos, Fractals), Advanced Computer Vision (Geometry, Physics, Statistics), Pattern Recognition and Speech Processing.

Ph.D. thesis *Texture and image microstructure analysis with modulation models, variational and energy techniques: detection and separation*, Advisor: Prof. Petros Maragos

1996–2001 **Diploma/M.Eng, Electrical & Computer Engineering**, *National Technical University of Athens*, Greece.

thesis *Nonlinear signal analysis methods for speech-silence-noise detection*, Advisor: Prof. Petros Maragos

Professional appointments

2010–2012 **Postdoctoral fellow**, *Computational Biomedicine Lab, Dept. of Computer Science, University of Houston, TX, USA*, Advisor: Prof. Ioannis A. Kakadiaris.
Leading the Biometrics Group, Research on Face Recognition: 3D-2D face recognition, 3D face modeling, cross-modal face similarity, geometric methods.
Federally-funded Biometrics Project: Algorithms for facial image analysis and biometric systems, software development and deployment, system prototyping, 3D/2D data acquisition, design and coordinate large-scale, cluster-based experiments, software and documentation deliverables, project management.

2010 **Adjunct lecturer**, *School of Electrical & Computer Engineering, National Technical University of Athens, Greece*.
Signals and Systems, undergraduate course (4^{th} semester).

2008–2009 **Postdoctoral research associate**, *Computer Vision, Speech Communication and Signal Processing Group, National Technical University of Athens, Greece*, Advisor: Prof. Petros Maragos.
Developed models for aural and visual attention, saliency of audiovisual streams and multimodal event detection with application in video abstraction and movie summarization. Designed and evaluated large-scale experiments of subjective user evaluations on movie summarization involving data acquisition, database formation, data annotation, subject training, statistical interpretation of results.

Research interests

Images, Computer Vision — Models for visual texture, image decomposition and segmentation, low-level vision and image descriptors, spatiotemporal descriptors and saliency, action recognition, 3D modeling and shape, variational methods.

Signal, Speech, Audio — Nonlinear methods and systems, signal analysis algorithms (1D, 2D, 2D + time, 3D), machine learning, multiband modeling and time-frequency methods, feature extraction, classification.

Content Abstraction — Computational attention, sensory saliency, multimodal fusion, interaction and event detection, multimedia summarization, data visualization.

Face Recognition — 3D-2D face recognition, 3D face modeling, cross-modal face similarity, geometric methods.

Research experience

2004–2007 **Graduate research assistant**, *Computer Vision, Speech Communication and Signal Processing Group, National Technical University of Athens, Greece*.
HIWIRE (European Union Research Project): Developed algorithms for voice activity detection and speech feature extraction from noisy data, as a front-end for robust speech recognition in adverse environments.
MUSCLE (European Union Network of Excellence): Researched methods for audio analysis in multimodal streams applied to audiovisual event detection. Integrated system for automatic, dynamic video summarization. Participated in project showcase demo for movie summarization.

2002–2006 **Young researcher fellowship**, *Greek Secretariat for Research & Technology, Athens, Greece*.
Π*ENE*Δ*-01* (GSRT Research Project): Developed algorithms for image segmentation, visual texture analysis and texture classification for digitized images of thin soilsections. Collaborated with geoscientists and biologists in a system for the ecological quality of soils.

2002 **Research fellowship**, *Institute of Communications and Computer Systems, National Technical University of Athens, Greece*.
ARCHIMEDES: Developed novel processing and representations of nonstationary signals for improved accuracy in ultrasound Doppler spectroscopy. Worked with medical, blood flow, data.

2001–2004 **Researcher - Algorithm engineer**, *Institute of Communications and Computer Systems, National Technical University of Athens*, Greece.
Image and signal processing algorithm development and analysis for Greek and European research projects.

Teaching experience

2009 **Guest lectures**, *School of Electrical & Computer Engineering, National Technical University of Athens*, Greece.
Computer Vision (grad. course)

2005–2006 **Graduate teaching assistant**, *School of Electrical & Computer Engineering, National Technical University of Athens*, Greece.
Signals and Systems (undergrad. course): Recitations, assignments, grading, web, tutoring.

2003–2005 **Graduate teaching assistant**, *School of Electrical & Computer Engineering, National Technical University of Athens*, Greece.
Computer Vision (grad. course): Programming assignments, lab, guest lectures, course material, tutoring.

Talks, demos and outreach

2012 **Pumps & Pipes 6, The Methodist Hospital Research Institute, TX, USA**, *3D and 2D Facial Image Computing (demo)*.

2012 **The Health Museum - Duke TIP Summer Conference, TX, USA**, *Computational Face Analysis and Face Recognition (seminar)*.

2010 **University of Houston, TX, USA**, *Image and Multimedia Analysis based on Multiband Models and Energy Operators: Texture, Decomposition, Saliency*.

2009 **Institute for Language and Speech Processing (ILSP), Athens, Greece**, *Movie Summarization through Multimodal Salient Event Detection (Audio, Visual, Text)*.

Professional activities

Journal paper reviewer

Neural Computation, Image and Vision Computing, IEEE Transactions on Multimedia, IEEE Transactions on Image Processing, IEEE Transactions on Audio, Speech and Language Processing, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Circuits & Systems for Video Technology, IEEE Signal Processing Letters, IEEE Geoscience and Remote Sensing Letters, Pattern Recognition, Machine Vision and Applications, Annals of Biomedical Engineering, Journal of the Optical Society of America, EURASIP Journal on Applied Signal Processing

Program committee member

IEEE International Conference on Automatic Face and Gesture Recognition (FG 2013)

Conference paper reviewer

European Conference on Computer Vision (ECCV 2012), IEEE Conference on Computer Vision & Pattern Recognition (CVPR 2012, 2011), International Conference on Pattern Recognition (ICPR 2012), European Signal Processing Conference (EUSIPCO 2012), International Joint Conference on Biometrics (IJCB 2011), IEEE International Conference on Image Processing (ICIP 2011, 2010, 2009)

Memberhips

2002–present **Institute of Electrical and Electronics Engineers**, *(IEEE)*, Member.

2002–present **IEEE Signal Processing Society**, Member.

2005–2006 **International Speech Communication Association**, *(ISCA)*, Student member.

2002–present **Technical Chamber of Greece**, *(TEE)*.

Skills and expertise

Languages	MATLAB (proficient), GNU Octave, Python (proficient), C++ (previous experience), LaTeX
Design	Prototyping, Scripting (Python, Bash shell), Pipelining, CMake, Version-control (SVN), Cluster-based computing, Cross-platform (Windows/Linux)
Algorithms	Image Analysis, Computer Vision, Signal Processing, Machine Learning, Pattern Recognition, Computational Science, Data Analysis
Research	Scientific Programming, Mathematical Modeling, Large-scale Evaluations, Dataset Acquisition
Writing	Scientific Publications, Documentation, Project Report Deliverables, Research Grant Proposals
Communication	Technical Presentations, Lectures, Science Outreach Talks, Demos

Languages

English	**Fluent**	*Cambridge ESOL CPE (CEFR level C2), Grade A*
		ETS TOEFL, CBT score: 280/300
German	**Literate**	*Goethe-Institut ZD (CEFR level B1)*
Spanish	**Proficient**	*Three year courses*
Greek	**Native**	

Publications

Face Recognition: [S3, S2, S1, C18, C17, C16]
Attention, Multimedia Summarization: [C14, C13, C12, J5, B1, C11, C10, C7]
Image Analysis and Computer Vision: [C15, C12, P1, J4, C9, C8, C6, C4, C3, C2, C1, J1]
Speech/Audio Analysis: [C14, J3, J2, C5]

Refereed Archival Journal Articles

[J5] **Evangelopoulos, G.**, Zlatintsi, A., Potamianos, A., Maragos, P., Rapantzikos, K., Skoumas, G., Avrithis, Y., Multimodal saliency and fusion for movie summarization based on aural, visual, textual attention, *IEEE Transactions on Multimedia*, (In Press), 2013.

[J4] Kokkinos, I., **Evangelopoulos, G.**, and Maragos, P. Texture analysis and segmentation using modulation features, generative models and weighted curve evolution, *IEEE Transactions on Pattern Analysis & Machine Intelligence*, 31(1):142–157, Jan. 2009.

[J3] Kotti, M., Ververidis, D., **Evangelopoulos, G.**, Panagakis, I., Kotropoulos, C., Maragos, P., and Pitas, I., Audio-assisted movie dialogue detection, *IEEE Transactions on Circuits and Systems for Video Technology*, special issue on Event Analysis in Videos, 18(11):1618–1627, Nov. 2008.

[J2] **Evangelopoulos, G.**, and Maragos, P. Multiband modulation energy tracking for noisy speech detection. *IEEE Transactions on Speech, Language and Audio Processing*, 14(6):2024–2038, Nov. 2006.

[J1] Sofou, A., **Evangelopoulos, G.**, and Maragos, P. Soil image segmentation and texture analysis: a computer vision approach, *IEEE Geoscience and Remote Sensing Letters*, 2(4):394–398, Oct. 2005.

Book Chapters

[B1] **Evangelopoulos, G.**, Rapantzikos, K., Maragos, P., Avrithis, Y. and Potamianos, A., Audiovisual attention modeling and salient event detection, *Multimodal Processing and Interaction: Audio, Video, Text*, edited by P. Maragos, A. Potamianos and P. Gros, Springer-Verlag, 2008.

Manuscripts in Submission

[S3] Kakadiaris, I., Toderici, G., **Evangelopoulos, G.**, Passalis, G., Chu, D., Zhao, X., Shah, S.K. and Theoharis, T., 3D-2D face recognition with pose-illumination normalization using a 3D deformable model and bidirectional relighting, *In IEEE Transactions Pattern Analysis and Machine Intelligence*, (Revisions), 2013.

[S2] Toderici, G., **Evangelopoulos, G.**, Fang, T., Theoharis, T. and Kakadiaris, I., UHDB11 database for 3D-2D face recognition, *In Int'l Conf. on Biometrics (ICB)*, (Submitted), 2013.

[S1] Zhao, X., Chu, D., **Evangelopoulos, G.**, Shah, S., Kakadiaris, I., UHAE: Minimizing illumination difference in 3D-2D face recognition using BRDF-based lighting maps, *In IEEE Trans. Systems, Man and Cybernetics - Part B*, (Submitted), 2012.

Refereed Conference Proceedings

[C18] Zhao, X., Zhang, W., **Evangelopoulos, G.**, Huang, D., Shah, S.K., Wang, Y., Kakadiaris, I., and Chen, L. Benchmarking Asymmetric 3D-2D Face Recognition Systems, *In Proc. 3D Face Biometrics Workshop, IEEE Int'l Conf. on Automatic Face and Gesture Recognition (FG)*, (Accepted), 2013.

[C17] Meyer, M., Riess, C., Angelopoulou, E., **Evangelopoulos, G.**, and Kakadiaris, I., Color constancy in 3D-2D face recognition, *In Proc. SPIE: Biometric and Surveillance Technology for Human and Activity Identification X*, (Accepted), 2013.

[C16] Christlein, V., Riess, C., Angelopoulou, E., **Evangelopoulos, G.**, and Kakadiaris, I., The impact of specular highlights on 3D-2D face recognition, *In Proc. SPIE: Biometric and Surveillance Technology for Human and Activity Identification X*, (Accepted), 2013.

[C15] Georgakis, C., Maragos, P., **Evangelopoulos, G.** and Dimitriadis, D., Dominant spatio-temporal modulations and energy tracking in videos: Application to interest point detection for action recognition, *In Proc. IEEE Int'l Conf. on Image Processing (ICIP)*, Orlando, FL, Oct. 2012.

[C14] Zlatintsi, A., Maragos, P., Potamianos, A. and **Evangelopoulos, G.**, A saliency-based approach to audio event detection and summarization, *In 12th European Signal Processing Conference (EUSIPCO)*, Bucharest, Romania, Aug. 2012.

[C13] Malandrakis, N., Potamianos, A., **Evangelopoulos, G.**, and Zlatintsi, A., A supervised approach to movie emotion tracking,*In Proc. IEEE Int'l Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Prague, Czech Republic, May. 22-27, 2011.

[C12] Gkioulekas, I. **Evangelopoulos, G.**, and Maragos, P., Spatial Bayesian surprise for image saliency & quality assessment, *In Proc. IEEE Int'l Conf. on Image Processing (ICIP)*, Hong Kong, Sep. 26-29, 2010.

[C11] **Evangelopoulos, G.**, Zlatintsi, A., Skoumas, G., Rapantzikos, K., Potamianos, A., Maragos, P., Avrithis, Y., Video event detection and summarization using audio, visual and text saliency, *In Proc. IEEE Int'l Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Taipei, Taiwan, Apr. 19-24, 2009.

[C10] **Evangelopoulos, G.**, Rapantzikos, K., Potamianos, A., Maragos, P., Zlatintsi, A., Avrithis, Y. Movie summarization based on audiovisual saliency detection, *In Proc. IEEE Intl. Conf. on Image Processing* (ICIP), San Diego, CA, USA, Oct. 12-15, 2008, pp. 2528-2531.

[C9] **Evangelopoulos, G.** and Maragos, P. Texture modulation-constrained image decomposition, *In Proc. IEEE Intl. Conf. on Image Processing* (ICIP), San Diego, CA, USA, Oct. 12-15, 2008, pp. 793-796.

[C8] **Evangelopoulos, G.**, and Maragos, P. Image decomposition into structure and texture subcomponents with multifrequency modulation constraints, *In Proc. IEEE Conf. on Computer Vision & Pattern Recognition* (CVPR), Anchorage, AK, USA, June 2008.

[C7] Rapantzikos, K., **Evangelopoulos, G.**, Maragos, P. and Avrithis, Y. An audiovisual saliency model for movie summarization, *In Proc. IEEE Intl. Workshop on Multimedia Signal Processing* (MMSP), Chania, Greece, 2007.

[C6] Maragos, P. and **Evangelopoulos, G.** Leveling cartoons, texture energy markers and image decomposition, *8th Intl. Symposium on Mathematical Morphology* (ISMM), Rio de Janeiro, Brazil, Oct. 10-13, 2007, pp. 125-138.

[C5] **Evangelopoulos, G.**, and Maragos, P., Speech event detection using multiband modulation energy. *In Proc. ISCA Interspeech* (Eurospeech), Lisbon, Portugal, 2005, pp. 685-688.

[C4] Sofou, A., **Evangelopoulos, G.**, and Maragos, P. Coupled geometric and texture PDE-based segmentation, *In Proc. IEEE Intl. Conf. on Image Processing* (ICIP), Genova, Italy, 2005, pp. II. 600-603.

[C3] **Evangelopoulos, G.**, Kokkinos, I., and Maragos, P. Advances in variational image segmentation using AM-FM models: Regularized demodulation and probabilistic cue integration. *In Proc. IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision* (VLSM), Beijing, China, 2005, LNCS, vol. 3275, pp. 121-136.

[C2] Kokkinos, I., **Evangelopoulos, G.**, and Maragos, P. Modulation-feature based textured image segmentation using curve evolution, *In Proc. IEEE Intl. Conf. on Image Processing* (ICIP), Singapore, 2004, vol. 2, pp. 1204-1207.

[C1] Kokkinos, I., **Evangelopoulos, G.**, and Maragos, P. Advances in texture analysis: Energy dominant component and multiple hypothesis testing, *In Proc. IEEE Intl. Conf. on Image Processing* (ICIP), Singapore, 2004, vol. 3, pp. 1509-1512.

Manuscripts in Preparation

[P1] Maragos, P. and **Evangelopoulos, G.**, Leveling cartoons, texture markers and multiscale image decomposition, *Journal of Mathematical Imaging and Vision*, 2013.