

Christos G. Bampis

CONTACT INFORMATION

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RESEARCH INTERESTS

Image and Video Processing, Machine Learning and Data Science, Medical Imaging, Video Streaming, Computer Vision

EDUCATION

September 2014 - May 2018 (expected), Ph.D., Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, GPA: 3.88/4.00

- Dissertation Topic: *Perceptual Video Quality and Quality of Experience for Adaptive Video Streaming* (tentative).
Parts of this dissertation are being built into the Netflix streaming and encoding pipeline, impacting millions of users in 190 countries.
- Advisor: Alan C. Bovik

September 2009 - July 2014, M. Eng. and Diploma, Electrical and Computer Engineering, National Technical University of Athens, Greece, GPA: 9.42/10.00 (Top 2%)

- Thesis Topic: *Graph-based Computer Vision and Machine Learning Methods for Object Detection*
- Advisor: Petros Maragos

PATENTS

1. G. Somanath and **C. G. Bampis**. Fusion of Panoramic Background Images Using Color and Depth Data, 2017. US Patent 9,699,380
2. Z. Li, A. Aaron, A. K. Moorthy, **C. G. Bampis**. Source-consistent Techniques for Predicting Absolute Perceptual Video Quality. (filed patent)
3. Z. Li, A. Aaron, A. K. Moorthy, **C. G. Bampis**. Device-consistent Techniques for Predicting Absolute Perceptual Video Quality. (filed patent)
4. Z. Li, **C. G. Bampis**. Techniques for Modeling Temporal Distortions when Predicting Perceptual Video Quality. (filed patent)
5. Z. Li, **C. G. Bampis**. Techniques for Predicting Video Quality Based on Complementary Perceptual Quality Models. (filed patent)

JOURNAL PAPERS

1. **C. G. Bampis**, Z. Li, A. K. Moorthy, I. Katsavounidis, A. Aaron, and A. C. Bovik. Study of Temporal Effects on Subjective Video Quality of Experience. *IEEE Transactions on Image Processing*, 26(11):5217–5231, 2017 [PDF]
2. **C. G. Bampis**, P. Maragos, and A. C. Bovik. Graph-Driven Diffusion and Random Walk Schemes for Image Segmentation. *IEEE Transactions on Image Processing*, 26(1):35–50, 2017 [PDF] [Code]
3. **C. G. Bampis**, Z. Li, and A. C. Bovik. Continuous Prediction of Streaming Video QoE Using Dynamic Networks. *IEEE Signal Processing Letters*, 24(7):1083–1087, July 2017 [PDF] [Code]
4. **C. G. Bampis**, P. Gupta, R. Soundararajan, and Alan C. Bovik. SpEED-QA: Spatial Efficient Entropic Differencing for Image and Video Quality. *IEEE Signal Processing Letters*, 24(9):1333–1337, 2017 [PDF] [Code]

5. **C. G. Bampis** and A. C. Bovik. Learning to Predict Streaming Video QoE: Distortions, Rebuffering and Memory. *submitted to Signal Processing: Image Communication*, [\[PDF\]](#) [\[Code\]](#)
6. **C. G. Bampis**, Z. Li, I. Katsavounidis, and A. C. Bovik. Recurrent and Dynamic Networks that Predict Streaming Video Quality of Experience. *submitted to IEEE Transactions on Image Processing*, [\[PDF\]](#)
7. X. Yu, **C. G. Bampis**, P. Gupta, and A. C. Bovik. Predicting Encoded Picture Quality in Two Steps is a Better Way. *submitted to IEEE Signal Processing Letters*, [\[PDF\]](#) [\[Code\]](#)
8. **C. G. Bampis**, Z. Li and A. C. Bovik, SpatioTemporal Feature Integration and Model Fusion for Full Reference Video Quality Assessment, submitted to IEEE Transactions on Circuits and Systems for Video Technology

CONFERENCE
PAPERS

1. P. Gupta, **C. G. Bampis** and A. C. Bovik, Multivariate Statistics for Blind Image Quality Applications. submitted to International Conference on Image Processing, 2018
2. **C. G. Bampis**, Z. Li and A. C. Bovik, Enhancing Temporal Quality Measurements in a Globally Deployed Streaming Video Quality Predictor. submitted to International Conference on Image Processing, 2018
3. **C. G. Bampis**, Z. Li and A. C. Bovik, A Simple Prediction Fusion Improves Data-driven Full-Reference Video Quality Assessment Models. submitted to Picture Coding Symposium, 2018
4. P. Gupta, **C. G. Bampis**, Y. Jin and A. C. Bovik, Spatial Invariant Image Models for Noise Estimation. accepted to Southwest Symposium on Image Analysis and Interpretation (SSIAI), 2018
5. **C. G. Bampis**, R. Christian, H. Hajj, and A. C. Bovik. Robust Matrix Factorization for Collaborative Filtering in Recommender Systems. *Asilomar Conf. on Signals, Systems, and Computers*, 2017 [\[PDF\]](#) [\[Code\]](#)
6. **C. G. Bampis** and A. C. Bovik. Temporal and Behavioral Aspects of Subjective Video Quality Perception. *Journal of Vision*, 17(10):722–722, 2017 [\[PDF\]](#) [\[Poster\]](#)
7. Z. Sinno, **C. G. Bampis**, and A. C. Bovik. Detecting, Localizing and Correcting Exposure-Saturated Regions Using a Natural Image Statistics Model. *Journal of Vision*, 17(10):377–377, 2017 [\[PDF\]](#) [\[Poster\]](#)
8. A. C. Bovik, **C. G. Bampis**, and T. R. Goodall. Perceptual Issues of Streaming Video. In *SID Symposium Digest of Technical Papers (Invited Paper)*, volume 48, pages 1097–1100, 2017
9. Z. Li and **C. G. Bampis**. Recover Subjective Quality Scores from Noisy Measurements. *Data Compression Conference*, pages 52–61, 2017 [\[PDF\]](#)
10. **C. G. Bampis**, G. Somanath, O. Nestares, and J. Yao. Panoramic Background Estimation from RGB-D Videos. *Electronic Imaging*, (15):14–19, 2017 [\[PDF\]](#)
11. **C. G. Bampis**, T. R. Goodall, and A. C. Bovik. Sampled efficient full-reference image quality assessment models. *Asilomar Conf. on Signals, Systems, and Computers*, pages 561–565, 2016 [\[PDF\]](#)

12. **Christos G. Bampis**, Petros Maragos, and Alan C. Bovik. Projective non-negative matrix factorization for unsupervised graph clustering. *International Conference on Image Processing (ICIP)*, pages 1255–1258, 2016 [[PDF](#)] [[Code](#)] [[Demo](#)] [[Supplementary](#)]
13. **C. G. Bampis**, A. C. Bovik, M. K. Markey, and K. M. Webb. Segmentation and Extraction of the Spinal Canal in Sagittal MR Images. In *Southwest Symposium on Image Analysis and Interpretation (SSIAI)*, pages 5–8, 2016 [[PDF](#)] [[Code](#)]
14. **C. G. Bampis** and P. Maragos. Unifying the Random Walker Algorithm and the SIR Model for Graph Clustering and Image Segmentation. *International Conference on Image Processing (ICIP)*, pages 2265–2269, 2015 [[PDF](#)] [[Code](#)]
15. **C. G. Bampis** et. al. Occlusal Caries Detection using Random Walker Algorithm: A Graph Approach. *International Conference of Engineering in Medicine and Biology Society (EMBC)*, pages 1929–1932, 2014

ARXIV PAPERS

1. **C. G. Bampis** and A. C. Bovik. An Augmented Autoregressive Approach to HTTP Video Stream Quality Prediction. [[PDF](#)]

IN PROGRESS

1. **C. G. Bampis**, Z. Li, I. Katsavounidis and A. C. Bovik, Towards Perceptually Optimized End-to-end Adaptive Video Streaming
2. T. R. Goodall, **C. G. Bampis** and A. C. Bovik, Jointly Assessing Compression and Scaling Artifacts

WORKING EXPERIENCE

R&D Netflix, Los Gatos, CA May 2017 - Aug 2017

- Invented various improvements to the Netflix video quality prediction system
- Contributed to the Netflix source code
- Studied low bitrate video artifacts in the encoding optimization loop

R&D Netflix, Los Gatos, CA May 2016 - Aug 2016

- Invented motion picture quality metrics
- Designed a large subjective testing process
- Studied the temporal effects in user quality of experience

R&D Intern Intel Labs, Santa Clara, CA May 2015 - Aug 2015

- Invented video algorithms for creating panoramas using RGB-D cameras

TEACHING EXPERIENCE

Lecturer/Tutor December 2011 - present

- Gave lectures for the 2017 Digital Image Processing class
- Gave lectures for the 2017 Digital Video Processing class
- Tutored undergraduate level courses in calculus, linear algebra, signals & systems, computer architecture and Matlab/Java programming.
- Tutored high school students (calculus, algebra and physics) in the free courses initiative (voluntary program organized by students).

RESEARCH
EXPERIENCE

Graduate Research Assistant

September 2014 - present

University of Texas at Austin, Laboratory for Image and Video Engineering
Perceptual image and video quality assessment research.

Undergraduate Research Assistant

July 2013 - July 2014

*National Technical University of Athens, Computer Vision, Speech Communication
and Signal Processing Group*
Researched novel graph methods for image analysis, object detection and classification.

Visiting Researcher

July 2010

IBISC University of Evry Val d'Essonne
Researched and implemented in C thermal - aware scheduling algorithms.

ACADEMIC
ACTIVITIES

- Reviewer for IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Signal Processing Letters, Machine Vision and Applications, BMVC 2016 and 2017, WCNC 2018
- Publication Chair for Picture Coding Symposium 2018

RELEVANT
COURSES

Digital Video, Advanced Data Mining, Probability and Stochastic Processes, Vision Systems, Biomedical Imaging, Estimation Theory, Advanced Algorithms

I/T SKILLS

Mostly worked with Matlab and Python, some experience with C++, R and Java

AWARDS

- Michael Arnaoytis Foundation Scholarship, 2015
- Best Project Award for the Digital Video Class, May 2015

REFERENCES

- Alan C. Bovik (Professor UT Austin, Advisor), bovik@ece.utexas.edu
- Petros Maragos (Professor NTUA, Master Thesis Supervisor), maragos@cs.ntua.gr
- Anne Aaron (Director of Video Algorithms, Netflix Inc.), aaaron@netflix.com
- Joydeep Ghosh (Professor UT Austin), jghosh@utexas.edu