

Hilmi Enes Egilmez, Ph.D.

CONTACT INFORMATION

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PROFESSIONAL SUMMARY

More than 10 years of research experience: 30 published papers, 1 book chapter, +1450 citations

- Machine learning and statistical modeling (more than 8 years)
- Signal processing, image and video compression (more than 8 years)
- Multimedia networking and video streaming (more than 2 years)

More than 7 years of industrial experience

- Co-inventor of 12 granted and 28 pending U.S. patents
- Co-inventor of more than 50 invention disclosure forms (IDFs)
- Co-author of more than 100 standard contributions to Joint Video Experts Team (JVET)
- Co-author of 17 standard proposals adopted in Versatile Video Coding (VVC)

EDUCATION

University of Southern California, Los Angeles, USA

Ph.D. in Electrical Engineering (minor in Computer Science) August 2012 - August 2017

- Dissertation Title: “Graph-based Models and Transforms for Signal/Data Processing with Applications to Video Coding”
 - Advisor: Prof. Antonio Ortega
- Research on graph-based models for signal processing and machine learning
 - Algorithms and optimization techniques for graph learning from data
 - Graph-based transform designs for image and video coding
 - Graph-based spectral methods for clustering and anomaly detection

Koc University, Istanbul, Turkey

M.Sc. in Electrical and Electronics Engineering September 2010 - July 2012

- Thesis Title: “Adaptive Video Streaming over OpenFlow Networks with QoS”
 - Advisor: Prof. A. Murat Tekalp
- Research on multimedia networking and software-defined network systems
 - Developed a QoS routing mechanism for video streaming over software-defined network
 - Involved in European FP-7 Project, *SARACEN*

B.Sc. in Electrical and Electronics Engineering September 2006 - June 2010

- Senior Project: “Real-Time Convex Optimization for Semidefinite Programs”

INDUSTRIAL EXPERIENCE

Qualcomm Technologies Inc., San Diego, USA

Staff Engineer, Multimedia R&D and Standards Group November 2020 - present

- Research on machine learning techniques for video compression
 - Managing a group working on neural-network based solutions
 - Development of end-to-end deep neural network-based video compression
- Reporting directly to a Vice President (VP)
- Initiating and leading cross-departmental collaborations

Senior Engineer, Multimedia R&D and Standards Group August 2017 - November 2020

- Research and development of novel techniques for video compression
 - Transformation, intra prediction, adaptive loop filtering, entropy coding, signaling
- Actively contributed to the Versatile Video Coding (VVC) standard
 - Co-author of 108 standard contribution documents for VVC
- Managed/mentored graduate interns (Ph.D. and M.Sc. candidates) and new hires

Interim Engineering Intern, Multimedia R&D and Standards Group *May - August 2016*
• Research on novel methods for video compression
• Co-author of 2 research papers on transform coding
• Mentor: Dr. Amir Said

LG Electronics Inc., San Jose, USA

Multimedia Intern, Mobile Research Lab *May - August 2015*
• Research on new techniques for video compression
• Co-author of 2 research papers and 2 IDFs
• Mentor: Dr. Onur G. Guleryuz

Multimedia Intern, Mobile Research Lab *May - August 2014*
• Research on new techniques for video compression
• Co-author of 1 research paper and 5 IDFs
• Mentor: Dr. Amir Said

Argela Technologies, Istanbul, Turkey

Consultant, R&D Department *November 2010 - May 2012*
• Guided practical software-defined networking solutions for video streaming

Vestel Electronics, Manisa, Turkey

Intern, R&D Department *July - August 2009*
• Developed an instant messaging client for Vestel's IPTVs

Schneider Electric, Istanbul, Turkey

Intern, Quality and Services Department *July - August 2008*
• Investigated PLCs and Human-Machine Interfaces for automation systems

SELECTED
PUBLICATIONS

Papers: 30, Book chapters: 1, Citations: 1475, h-index: 16, i10-index: 19 (based on Google Scholar)

- H.E. Egilmez, *et al.*, "Transform Network Architectures for Deep Learning based End-to-End Image/Video Coding in Subsampled Color Spaces", arxiv.org/abs/2103.01760, 2021.
- H.E. Egilmez, Y.-H. Chao, A. Ortega, "Graph-based Transforms for Video Coding", *IEEE Transactions on Image Processing*, 2020.
- H.E. Egilmez, E. Pavez, A. Ortega, "Graph Learning from Filtered Signals: Graph System and Diffusion Kernel Identification", *IEEE Transactions on Signal and Information Processing over Networks*, 2019.
- E. Pavez, H.E. Egilmez, A. Ortega, "Learning Graphs with Monotone Topology Properties and Multiple Connected Components", *IEEE Transactions on Signal Processing*, 2018.
- H.E. Egilmez, E. Pavez, A. Ortega, "Graph Learning from Data under Structural and Laplacian Constraints", *IEEE Journal of Selected Topics in Signal Processing*, 2017.
- H.E. Egilmez, A. Ortega, "Spectral Anomaly Detection using Graph-based Filtering for Wireless Sensor Networks", *IEEE ICASSP*, 2014.
- H.E. Egilmez, A.M. Tekalp, "Distributed QoS Architectures for Multimedia Streaming Over Software Defined Networks", *IEEE Transactions on Multimedia*, 2014.
- H.E. Egilmez, S. Civanlar, A.M. Tekalp, "An Optimization Framework for QoS-Enabled Adaptive Video Streaming over OpenFlow Networks", *IEEE Transactions on Multimedia*, 2013.

TECHNICAL SKILLS

- Programming Languages: *C/C++, Python, Java, MATLAB, Perl, Assembly*
- Software Packages/Libraries: *PyTorch, OpenCV, OpenMP, Intel-TBB*
- Video Coding Standards/Reference Software: *VVC/VTM, HEVC/HM, H.264/JSVM, JEM*

REFERENCES

References are available upon request.

My full CV is available online at: http://www-scf.usc.edu/~hegilmez/hegilmez_cv.pdf

VISA STATUS

Currently on H1B: Eligible for H1B transfer until 2026.