Curriculum Vitae

Roya Choupani, PhD

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Education

1. PhD. Computer Engineering Department, Delft University of Technology, Delft, the Netherlands, 2017
   "Scalable Video Coding", PhD Thesis, TU Delft, 2017
2. MSc. Computer Engineering Department, Cankaya University, Ankara, Turkey, 2002

Professional Experience

- **Visiting Assistant Professor**, Department of Computer Science, Angelo State University (2021 - present)
- **Assistant Professor** at the Computer Engineering Department of Cankaya University, Ankara (2017 -2021)
- **Lecturer** at the Computer Engineering Department of Cankaya University (2000-2017)
  Taught many computer engineering and science courses at the undergraduate and graduate level.
- **PhD Student and Researcher** at TU Delft, the Netherlands (2007-2017)

Projects

1. **Content based video retrieval**. In this project, videos are analyzed in terms of their contents and are subsequently classified for later retrieval. The recent H.264 video coding standard is utilized for estimating the content through examining key frames. The project was conducted in the computer engineering department of the Technical University of Delft, the Netherlands under the supervision of Professor Stephan Wong, and Professor Koen Bertels (2014-2017).
2. **Optimizing video for transmission over unreliable networks**. The main goal of the project was to improve the standard video coding methods to make them more robust against frame/data losses. The constraints involved were preserving the compression efficiency in terms of bits-per-pixel, preserving

the quality of video after compression, and developing self-adjusting features for the algorithm to make them resilient against abrupt changes in the network parameters in real time. The project was conducted in the computer engineering department of the Technical University of Delft, the Netherlands, under the supervision of Professor Stephan Wong and Professor Koen Bertels (2008-2015).

3. **Converting 2D movies into 3D by automatic depth estimation**. The temporal changes of the video content were used as the main feature for estimating the distance of each segmented area from the camera and synthesizing the second viewpoint frame for 3D. The project was funded by the SAN-TEZ program of the Ministry of Science, Industry, and Technology (2012-2013).

Teaching Experience

Courses taught (2000-)

1. Introduction to C programming
2. Advanced C programming
3. Programming with C++
4. Data Management and File Organization
5. Database Management Systems
6. Introduction to Multimedia Computing (*developed*)
7. Artificial Intelligence (*developed*)
8. Machine Learning (*graduate level new course*)
9. Data Structures
10. Operating Systems
11. Computer Networks
12. Capstone Senior Project

Research Interests

- Video Coding
- Multimedia Computing
- Artificial Intelligence
- Machine Learning
- Big Data
- Quantum Computing

Programming Skills

- Developing computer programs since 1991 using a number of different programming languages and data analysis tools such as C/C++, C#, Pascal, Fortran, Prolog, Java, Python, and MATLAB.

Publications

Journal Papers

1. Yusuf Kursat Tuncel, Kasim Oztoprak, Roya Choupani, Ismail Butun, "Application Layer Packet Processing using PISA Switches", *Elsevier Journal of Computer Networks* (submitted)

2. Mohanad Gashot, Roya Choupani, "Review of Video Summarization Techniques", *Romanian Journal of Information Science and Technology* (submitted)

3. Mustafa Nahedh, Roya Choupani, "Offline Video Stabilization Using Artificial Neural Network", *Gazi University Polytechnic Journal* (submitted)

4. Mustafa Karasolak, Roya Choupani (2019), "[Mugshot Matching via Generation from Sketches using Convolutional Neural Networks](#)", *International Journal of Multimedia and Image Processing*, 9(1), 459-465.

5. Choupani, R., Wong, S., & Tolun, M. (2014). Multiple description coding for SNR scalable video transmission over unreliable networks. *Multimedia Tools and Applications*, *69*(3), 843–858. (SCI)

6. Choupani, R., Wong, S., & Tolun, M. (2014). Spatial multiple description coding for scalable video streams. *International Journal of Digital Multimedia Broadcasting*, *2014*.

7. Choupani, R., Wong, S., & Tolun, M. R. (2012). Unbalanced multiple description wavelet coding for scalable video transmission. *Journal of Electronic Imaging*, *21*(4), 043006 (SCI)

Conference Papers

1. Inas Al-Kamachy, Reza Hassanpour, Roya Choupani, "Classification of Diabetic Retinopathy using Pre-Trained Deep Learning Models", *ICASSP* (*submitted*)

2. Selim Surucu, Roya Choupani, Erdogan Dogdu, "Detecting Political Polarization Using Big Data", *IEEE Big Data Conference* (*submitted*)

3. Hamza Haruna Mohammad, Erdogan Dogdu, Roya Choupani, Tomiya S. A.

Zarbega (2021), "Distributed Query Processing and Reasoning over Linked Big Data", *IEEE Big Data Conference* (*submitted*)

4. Betul Bayrak, Roya Choupani, Erdogan Dogdu (2020), "Link Prediction in Knowledge Graphs with Numeric Triples Using Clustering", *Proc. of the IEEE Big Data Conference*.

5. Hamza Haruna Mohammad, Erdogan Dogdu, Abdul Kadir Gorur, Roya Choupani (2020), "Multi-Label Classification of Text Documents Using Deep Learning", *Proc. of the IEEE Big Data Conference*.

6. Merve Duman, Roya Choupani, Faris Serdar Tasel (2019), "Automatic Identification and Measurement of Antibiogram Analysis", The *9th Int. Conference on Digital Image Processing and Vision* (ICDIPV 2020).

7. Onur Göker, Nazli Nazli, Mehmet Murat Erol, Roya Choupani, Erdogan Dogdu (2018), "A Robust Watermarking Scheme Over Quadrant Medical Image in Discrete Wavelet Transform Domain", 2018 *5th International Conference on Control, Decision and Information Technologies* (CoDIT'18).

8. Reza Hassanpour, Erdogan Dogdu, Roya Choupani, Onur Goker, and Nazli Nazli, "Phishing e-mail detection by using deep learning algorithms", *Proc. of the ACM South East Conference 2018*.

9. R. Choupani, S. Wong, M. Tolun, "Using wavelet transform self-similarity for effective multiple description video coding", *10th International Conference on Information, Communications and Signal Processing* (ICICS), 2015

10. R. Choupani, S. Wong, M. Tolun, "Drift-free video coding for privacy protected video scrambling", *10th International Conference on Information, Communications and Signal Processing* (ICICS), 2015

11. R Choupani, S. Wong, M. R. Tolun, "Hierarchical SNR Scalable Video Coding with Adaptive Quantization for Reduced Drift Error", *10th Int. Joint Conf. on Computer Vision, Imaging and Computer Graphics Theory and Applications* (VISAPP 2015), 11-14 Mar 2015, Berlin, Germany, 117-123, 2015.

12. R. Choupani, S. Wong, M. Tolun, "Optimized Multiple Description Coding for Temporal Video Scalability", *Advances in Computational Science, Engineering and Information Technology*, Springer, 167-176, 2013.

13. R. Choupani, S. Wong, M. Tolun, "Adaptive Embedded Zero Tree for Scalable Video Coding", *The World Congress on Engineering*, London, 2011, UK

14. R. Choupani, S. Wong, M. Tolun, "Scalable Video Transmission Over Unreliable Networks using Multiple Description Wavelet Coding", *7th International Conference on Digital Content, Multimedia Technology and its Applications*, 2011, South Korea

15. R. Choupani, S. Wong, M. Tolun, "A Drift-Reduced Hierarchical Wavelet Coding Scheme for Scalable Video Transmissions", *MMEDIA* 2009, France

16. R. Choupani, S. Wong, M. Tolun, "Multiple Description Scalable Coding for Video Transmission over Unreliable Networks", *Lecture Notes in Computer Science*, Samos 2009, Greece

17. R Choupani, S Wong, MR Tolun, "Weighted Embedded Zero Tree for Scalable Video Compression", *International Conference on Image Processing, Computer Vision, & Pattern Recognition*, 681-684, 2008.

18. R Choupani, S Wong, MR Tolun, "Main Issues in Scalable Video Coding: A Review", *International Conference on Image Processing, Computer Vision, & Pattern Recognition*, 497-505, 2007.

19. R. Choupani, S. Wong, M. Tolun, "A syntactic learning method for hand gesture recognition" *Proceedings of the 5th WSEAS Int. Conf. on Signal, Speech and Image Processing*, Corfu, Greece, August 17-19, 231-235, 2005

Graduate Students' Thesis Advising

1. Hamza Haruna Mohammed (PhD candidate), "Machine Learning in Quantum Computing", 2022 (expected)

2. Selim Surucu (PhD candidate), "Automatic Image Forgery Detection in Medical Images", 2022 (expected)

3. Engin Tureli (MS candiate), "Ontology-based product categorization using machine learning," 2021 (expected)

4. Sedat Akel (MS candiate), "Optimizing the Training Algorithms of Machine Learning using GAN Networks", 2021 (expected)

5. Tarkan Eyerci (MS candiate), "Product defect detection from reviews using machine learning", 2021 (expected)

6. Omer Sarikaya (MS candiate), "Cryptocurrency price prediction", 2021 (extecpted)

7. Hacer Dogan (MS candiate), "Identifying and Removing Objects from Video Frames", 2021 (*expected*)

8. Kutlu Erman Ozgil (MS candiate), "Analysis of Question Answering Using AI by Text Categorization Methods", 2021 (*expected*)

9. Hatice Nazli Kus (MS candiate), "Student Performance Prediction Using Machine Learning", 2021 (*expected*)

10. Onur Demir (MS candiate), "Semantic Word Embedding Model Learned from Twitter Data for Political Polarization Detection", 2021 (expected)

11. Yusuf Kursat Tuncel (MS), "Zero Touch Networking: A Comprehensive Performance Study on Software Defined Networks", 2021
12. Baransel Saginda (MS), "Deep Learning Based Anomaly Detection on System Logs Using Time Differences", 2020
13. Selim Surucu (MS), "Measuring Political Polarization Using Big Data", 2020
14. Betul Bayrak (MS), "Evaluation of Graph Embedding-based Reasoning Over Knowledge Graphs", 2020
15. M. Murat Erol (MS), "Temporal Video Segmentation", 2019
16. Mustafa Karasolak (MS), "Matching composite drawings and mugshot photographs to determine the identity of the person", 2019
17. Inas Mudhere Raghib Kafi Al-Kamachy (MS), "Classification of diabetic retinopathy using pre-trained deep learning models", 2019
18. Merve Duman (MS), "Automatic identification and measurement of antibiogram analysis", 2019
19. Mohanad Ali Gashot (MS), "A comparative analysis of video summarization techniques", 2019
20. Hamza Haruna Mohammed (MS), "Multi-label classification of text document using deep learning", 2019
21. Mustafa Nahedh Hasan Al-Janabi (MS), "Digital video stabilization using artificial neural networks", 2019
22. Nazlı Nazlı (MS), "Analysis of machine learning-based spam filtering techniques", 2018
23. Onur Goker (MS), "Spam filtering using big data and deep learning", 2018

Service

1. Reviewer for Journal of Electronic Imaging, Springer Multimedia Tools and Applications, Springer Signal, Image and Video Processing.
2. Faculty Advisor for ACM Student Chapter, Cankaya University, 2020-present.
3. Graduate Student Coordinator, Department of Computer Engineering, Cankaya University, 2018-2020. Advising MS and PhD Students towards choosing a thesis advisor, coordinating seminar and presentation activities of graduate students every semester.
4. Graduate Assistant Hiring Committee, 2017-present. Preparation of written exam questions and evaluations, oral examination and interviews.
5. Graduate Student Admission Committee, 2017-present. Review of applications, written and oral examination evaluations.

6. Faculty Hiring Committee, Department of Computer Engineering, Cankaya University, 2014-2019.
7. Curriculum Development and Assessment Committee, Cankaya University, 2006-present.
8. Course Scheduling Coordinator, Department of Computer Engineering, Cankaya University, 2002-present.
9. Student Recruitment Committee, Department of Computer Engineering, Cankaya University, 2002-present.
10. Social Events Committee, Department of Computer Engineering, Cankaya University, 2010-present.
11. Senior Project Coordinator, Department of Computer Engineering, Cankaya University, 2006-2011.
12. Conference Organizer, 3rd Engineering and Technology Symposium, Cankaya University, 2010

Talks and Presentations
1. "Artificial Intelligence and Machine Learning", Cankaya University, AI and Robotics Student Organization Event, Dec 3, 2019.
2. "Women in Computing", ACM Bilkent University Chapter, ACWiC Event, Mar
3. "Using wavelet transform self-similarity for effective multiple description video coding", 10th International Conference on Information, Communications and Signal Processing (ICICS 2015), 2 Dec 2015, Singapore.
4. "Drift-free video coding for privacy protected video scrambling", 10th International Conference on Information, Communications and Signal Processing (ICICS 2015), 3 December 2015, Singapore
5. "Hierarchical SNR Scalable Video Coding with Adaptive Quantization for Reduced Drift Error", International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP 2015), 11 March 2015, Berlin, Germany
6. "Adaptive Embedded Zero Tree for Scalable Video Coding", The World Congress on Engineering, 6 July 2011, London, UK
7. "A Drift-Reduced Hierarchical Wavelet Coding Scheme for Scalable Video Transmissions", 20 Jul 2009, *MMEDIA* 2009, Colmare, France