Koray Ozcan

(515) 708-8410
kozcan@syr.edu
https://www.linkedin.com/in/koray6/
Google Scholar

Professional Summary

- Computer Scientist with 3 years of experience in computer vision, signal/image processing, embedded systems, and artificial intelligence
- Strong research professional with a Ph.D. focused in Electrical and Computer Engineering
- 1 book chapter, 5 peer-reviewed journals, and Co-PI of an acquired grant of $1.2M
- Authorized to work in the USA with nearly completed Permanent Residency

Research Interests

Video/Image Processing, Computer Vision, Embedded Systems, Video Event Detection, Artificial Intelligence, Machine/Deep Learning, Autonomous Driving, Connected Vehicles

Education

Iowa State University, Ames, Iowa, USA

Post-doctoral Researcher, Institute for Transportation

Syracuse University, Syracuse, New York, USA

Doctor of Philosophy *Ph.D.*, Electrical and Computer Engineering, May 2017

- Dissertation Topic: Computer Vision Algorithms for Mobile Camera Applications
- Advisor: Dr. Senem Velipasalar

Bilkent University, Ankara, Turkey

Bachelor of Science *B.S.*, Electrical and Electronics Engineering, May 2011

Certificates and Awards

- DAAD (German Academic Exchange Service) Postdoc-Net Fellow **2019**
- Emerging Leaders Academy, Iowa State University, Ames, Iowa, USA **2018**
- Scholarship and Research Assistantship Covering Tuition and Stipend for B.S. and Ph.D. Studies

Professional Experience

Computer Scientist Postdoctoral Researcher **Feb. 2017 - Dec. 2019**
Institute for Transportation, Iowa State University, Ames, Iowa, USA

- Intelligent traffic operations using static and mobile cameras with implementations running on High Performance Computing (HPC) Clusters
- Driver behavior analysis using cabin and front cameras in collaboration with University of Nebraska Medical Center (UNMC) and Toyota
- Connected vehicle hardware setup (Siemens) and license acquisition for the state of Iowa

Computer Scientist Research Assistant **Aug. 2011 - Jan. 2017**
Syracuse University, Syracuse, New York, USA

- Mobile camera applications concentrating on human activity detection and classification
- Lightweight algorithms suitable for embedded mobile platforms
- Funded by NSF: Smart Cameras Getting Smarter: Detecting High-level Events Across Battery-powered Wireless Embedded Smart Cameras

IBM T.J. Watson Research Center Yorktown Heights, NY **Jun. 2015 - Dec. 2015**

- *Research Intern* Exploratory Computer Vision Group

Skills

- Languages: C/C++, Java, MATLAB, Objective-C, Python, VHDL
- Applications: Android Studio, MATLAB, OpenCV, TensorFlow, Keras, Visual Studio, Xilinx.
- Coursework: Digital Image Processing, Multiple View Camera Geometry, Embedded System Design, Statistical Signal Processing, Detection and Estimation Theory, Random Processes, Digital Communications, Probabilistic Graphical Models, Graph Theory, FPGA Circuits and Applications, Analytical Data Mining, Social Media Mining, Mobile Application Programming, Medical Image Processing

Grant Proposals

Deep InSight: Deep Extraction of Driver State from Naturalistic Driving Dataset, Exploratory Advanced Research of U.S. DOT Federal Highway Administration, Co-PI with A. Sharma (PI), S. Sarkar (Co-PI), C. Hedge (Co-PI), S. Velipasalar (Co-PI), M. Rizzo (Co-PI), J. Merickel (Co-PI), and Y. Adu-Gyamfi (Co-PI) $1,200,000 for the period 2019-2022.

Publications - Book Chapter

[B1] **K. Ozcan**, A. Mahabalagiri, and S. Velipasalar, "Automatic fall detection and activity classification by a wearable camera," in Distributed Embedded Smart Cameras, Christophe Bobda and Senem Velipasalar, Eds., pp. 151-172. Springer New York, 2014.

Publications - Refereed Journal

[J1] **K. Ozcan**, A. Sharma, S. P. Bradbury, D. Schweitzer, T. Blader, and S. Blodgett, "Milkweed (*Asclepias Syriaca*) Plant Detection using Mobile Cameras," Ecosphere: Emerging Technologies, accepted June 2019.

[J2] M. Cornacchia, **K. Ozcan**, Y. Zheng, and S. Velipasalar, "A Survey on Detection and Classification using Wearable Sensors," IEEE Sensors Journal, vol. 17, no. 2, pp. 386-403, Jan.15, 2017.

[J3] **K. Ozcan**, S. Velipasalar, and P. K. Varshney, "Autonomous Fall Detection with Wearable Cameras by using an Ali-Silvey Distance Measure for Threshold Computation," IEEE Transactions on Human-Machine Systems, vol. 47, no. 1, pp. 31-39, Feb. 2017.

[J4] **K. Ozcan** and S. Velipasalar,"Wearable Camera- and Accelerometer-Based Fall Detection on Portable Devices," IEEE Embedded Systems Letters, vol. 8, no. 1, pp. 6-9, March 2016.

[J5] **K. Ozcan**, A. K. Mahabalagiri, M. Casares, and S. Velipasalar, "Automatic Fall Detection and Activity Classification by a Wearable Embedded Smart Camera," IEEE Journal on Emerging and Selected Topics in Circuits and Systems, vol.3, no.2, pp.125,136, June 2013.

Publications - Conference Papers

[C1] **Ozcan, K.**, Sharma, A., Merickel, J., Knickerbocker, S., Hawkins, N., Rizzo, M. (2020) Road weather condition estimation using fixed and mobile based cameras. In: Arai K., Kapoor S. (eds) Advances in Computer Vision. CVC 2019. Advances in Intelligent Systems and Computing, vol 943. Springer, Cham.

[C2] Poddar, S., **Ozcan, K.**, Chakraborty, P., Ahsani, V., Sharma, A., and Sarkar, S., "Comparison of machine learning algorithms to determine traffic congestion from camera images," Transportation Research Board 97th Annual Meeting, January 7-11, 2018, Washington DC, USA.

[C3] Y. Zheng, **K. Ozcan**, and S. Velipasalar, "A codebook of brightness transfer functions for improved target re-identification across non-overlapping camera views," 2017 IEEE Global Conference on Signal and Information Processing (GlobalSIP), Montreal, QC, Canada, 2017, pp. 166-170.

[C4] **Koray Ozcan**, Senem Velipasalar, and Anuj Sharma. 2017. Traffic Sign Detection from Lower-quality and Noisy Mobile Videos. In Proceedings of the 11th International Conference on Distributed Smart Cameras (ICDSC 2017). ACM, New York, NY, USA, 15-20.

[C5] Shuo Wang, **Koray Ozcan**, and Anuj Sharma, "Region-based deformable fully convolutional networks for multi-class object detection at signalized traffic intersections: NVIDIA AICity challenge 2017 Track 1," 2017 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computed, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation, San Francisco, CA, 2017, pp. 1-4.

[C6] 6. S. Lyu, M. Chang, D. Du, L. Wen, H. Qi, Y. Li, Y. Wei, L. Ke, T. Hu, M. D. Coco, P. Carcagni, D. Anisimov, E. Bochinski, F. Galasso, F. Bunyak, G. Han, H. Ye, H. Wang, K. Palaniappan, **K. Ozcan**, L. Wang, L. Wang, M. Lauer, N. Watcharapinchai, N. Song, N. M. AlShakarji, S. Wang, S. Amin, S. Rujikietgumjorn, T. Khanova, T. Sikora, T. Kutschbach, V. Eiselein, W. Tian, X. Xue, X. Yu, Y. Lu, Y. Zheng, Y. Huang, Y. Zhang, "UA-DETRAC 2017: Report of AVSS2017 & IWT4S Challenge on Advanced Traffic Monitoring," 2017 14th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Lecce, Italy, 2017, pp. 1-7.

[C7] B. Kakillioglu, **K. Ozcan** and S. Velipasalar, "Doorway detection for autonomous indoor navigation of unmanned vehicles," 2016 IEEE International Conference on Image Processing (ICIP), Phoenix, AZ, USA, 2016, pp. 3837-3841.

[C8] **K. Ozcan**, A. Mahabalagiri and S. Velipasalar, "Autonomous tracking and counting of footsteps by mobile phone cameras," 2015 49th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, 2015, pp. 1408-1412.

[C9] **K. Ozcan** and S. Velipasalar. 2015. Robust and reliable step counting by mobile phone cameras. In Proceedings of the 9th International Conference on Distributed Smart Cameras (ICDSC '15). ACM, New York, NY, USA, pp. 164-169.

[C10] Y. Zheng, **K. Ozcan**, S. Velipasalar, H. Shen, and Q. Qiu. 2014. Energy Efficient Tracking by Dynamic Voltage and Frequency Scaling on Android Smart Phones. In Proceedings of the International Conference on Distributed Smart Cameras (ICDSC '14). ACM, New York, NY, USA, Article 14, 6 pages.

[C11] A. K. Mahabalagiri, **K. Ozcan**, and S. Velipasalar, "Camera motion detection for mobile smart cameras using segmented edge-based optical flow," 2014 11th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Seoul, 2014, pp. 271-276.

[C12] A. K. Mahabalagiri, **K. Ozcan**, and S. Velipasalar, "A robust edge-based optical flow method for elderly activity classification with wearable smart cameras," 2013 Seventh International Conference on Distributed Smart Cameras (ICDSC), Palm Springs, CA, 2013, pp. 1-6.

[C13] **K. Ozcan**, A. K. Mahabalagiri, and S. Velipasalar, "Fall detection and activity classification using a wearable smart camera," 2013 IEEE International Conference on Multimedia and Expo (ICME), San Jose, CA, 2013, pp. 1-6.

[C14] M. Casares, **K. Ozcan**, A. Almagambetov, and S. Velipasalar, "Automatic fall detection by a wearable embedded smart camera," 2012 Sixth International Conference on Distributed Smart Cameras (ICDSC), Hong Kong, 2012, pp. 1-6.