



Exponent®
Engineering & Scientific Consulting

Surya Sharma, Ph.D.

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Professional Profile

Dr. Sharma is a computer scientist with expertise in machine learning, embedded computing, system design, data science, and computer vision. He has industry experience creating defect inspection systems for manufacturing plants, as well as experience working with human factors researchers, clinicians and nutritionists in applying machine learning and data science in the domains of healthcare and biomedical engineering.

During these projects, he has developed sensors, camera systems, and software that collect large-scale data sets. His programming language experience includes, but is not limited to, C, C++, MATLAB and Python.

Prior to joining Exponent, Dr. Sharma worked on a camera based real-time defect inspection system for Samsung Electronics Home Appliances and assisted the Fraunhofer USA Center for Experimental Software Engineering (CESE) in implementing computer vision algorithms through easy to use software interfaces.

Dr. Sharma received his Ph.D. in Computer Engineering from Clemson University, where he researched and developed low-power wearable sensors to track wrist motion in everyday life, and later published the largest wrist motion dataset in the field of automated dietary monitoring. He analyzed and visualized the collected data to develop machine learning models and convolutional neural networks using Tensorflow and Keras that recognize everyday human activities. These algorithms are now deployed to Android and Apple wearable devices and used by clinicians in diabetes research.

Academic Credentials & Professional Honors

Ph.D., Computer Engineering, Clemson University, 2020

M.S., Computer Engineering, Clemson University, 2014

B.E., Electronics & Telecommunications Engineering, University of Mumbai, India, 2012

Licenses and Certifications

Cellebrite Certified Operator (CCO)

Cellebrite Certified Physical Analyst (CCPA)

Academic Appointments

Graduate Teacher of Record, Basic Electrical Engineering, Clemson University, 2020

Graduate Teacher of Record, Basic Electrical Engineering, Clemson University, 2014

Graduate Teacher of Record, Programming in MATLAB, Clemson University, 2014

Teaching Assistant, Basic Electrical Engineering, Clemson University, 2013

Prior Experience

Research Assistant, Clemson University, 2015 - 2020

Chief Technical Strategist, eArth Samvarta Foundation, 2018 – 2020

Consultant, SAAPE Designs. Inc, 2017

Professional Affiliations

Member, IEEE

Member, ACM

Languages

Hindi

Publications

Sharma, Surya, and Adam Hoover. "The Challenge of Metrics in Automated Dietary Monitoring as Analysis Transitions from Small Data to Big Data." 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM). IEEE, 2020.

Sharma, Surya, et al. "The Impact of Walking and Resting on Wrist Motion for Automated Detection of Meals." ACM Transactions on Computing for Healthcare 1.4 (2020): 1-19.

Sharma, Surya, and Adam Hoover. "A Study on Linear Acceleration of the Wrist During Free-Living." 2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM). IEEE, 2019.

Sharma, Surya, et al. "Automatic Detection of Periods of Eating Using Wrist Motion Tracking." 2016 IEEE First International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE). IEEE, 2016.

Soleimani, Arash, Kyle Smith, Jiawei Zeng, Keith E. Green, Danielle Herro, Jessie Santiago, Surya Sharma et al. "Learning with CyberPLAYce, a Cyber-physical Learning Environment for Elementary Students Promoting Computational Expression." CHI'14 Extended Abstracts on Human Factors in Computing Systems, pp. 165-166. 2014.

Iyer, A., Sharma, S., "Inertial Measurement and Filtering of a UAV Flight," International Journal of Scientific & Engineering Research, Volume 4, Issue 2, 2013.

Presentations

Sharma, Surya, and Adam Hoover. "The Challenge of Metrics in Automated Dietary Monitoring as

Analysis Transitions from Small Data to Big Data.", Workshop in Artificial Intelligence Techniques for Biomedicine and Healthcare (AIBH) at 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Seoul, South Korea.

Sharma, Surya, and Adam Hoover. "A Study on Linear Acceleration of the Wrist During Free-Living", Workshop on Biomedical and Health Informatics (BHI) at 2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), San Diego, CA.

Adam Hoover, and Surya Sharma. "The Impact of Secondary Activities on Automated Detection of Meals", invited talk at the IEEE Workshop on Automated Dietary Monitoring, May 2019, Chicago, IL.

Sharma, Surya, and Adam Hoover. "The Quantification of Accelerometer Noise Experienced During Wrist Motion." 2019 IEEE International Conference on Biomedical and Health Informatics (BHI), Chicago, IL.

Sharma, Surya, and Adam Hoover. "An Evaluation of an Eating Activity Detection Algorithm on 408 People." 2018 IEEE International Conference on Biomedical and Health Informatics (BHI), Las Vegas, NV.

Sharma, Surya, et al. "Automatic Detection of Periods of Eating Using Wrist Motion Tracking." 2016 IEEE First International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), Washington D.C.

Sharma, Surya "Bite Counting: A Simpler Approach to Dealing with Obesity", invited talk, Clemson Board of Visitors meeting, 2014.

Additional Education & Training

AI for Medical Diagnosis, Deeplearning.ai, April 2020, Credential ID AMZJRYV59HQW

Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Deeplearning.ai, April 2018, Credential ID YE68399LVPN2

Neural Networks and Deep Learning, Deeplearning.ai, April 2018, Credential ID EV9S2MNJ5XQT

Research Grants

Visual Defect and Inspection System, Samsung, Research Assistant, \$140,624 (\$140,624), 2018-2019.

Using Context to Validate and Improve Wrist-Tracking Measures of Eating Activity, NIH, Research Assistant, \$1,746,064 (\$702,656), 2015-2019.

Peer Reviews

IEEE Journal of Biomedical, Health and Informatics

2020 25th International Conference on Pattern Recognition (ICPR 2020)

2019 IEEE International Conference on Biomedical and Health Informatics (BHI'19)

2019 IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN '19)

2018 IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN '18)