Curriculum Vitae

Hassan Foroosh

CAE Link Professor of Computer Science

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I. Highlights

Research Interests

Deep Learning, image/video processing and analysis, computer vision, confluence of Natural Language Processing and computer vision, and the statistical modeling of data.

Recent Research Focus

Sparse representation in deep learning, efficient deep learning models, multilinear methods in machine learning, semantics in images and videos, sparse sampling of "Big Data" for learning subspace structures.

Summary of Impact in Research and Education

Research:

- Publications in high impact factor peer-reviewed journals, and in top-tier peer-reviewed conference proceedings, including all conferences ranked #1 in the areas of Computer Vision (CVPR, ICCV, ECCV, etc.), Machine Learning (ICLR, AAAI, ACL, EMNLP, etc.), and Image Processing and Pattern recognition (ICIP, ICPR).
- 98% of external funding originated from the most competitive and prestigious federal sources, including NASA (multiple awards), NSF (multiple award), DOD (multiple awards), all of which are the sponsors with highest national Competition.
- Actively seeking interdisciplinary research, with over half of research conducted and produced in partnership with academic partners from other disciplines and industrial collaborators.

Teaching and Advising:

- All graduated doctoral students have secured prominent positions: 5 secured faculty positions, 2 started jointly a very successful high-tech startup company, and the rest joined major industry, such as AMD, Amazon, J.P. Morgan, Ali Baba, AI Division of Target, L3-Harris Corporation, Lockheed Martin, LENSAR, etc.
- Since joining UCF, have taught 9 different courses, developed 2 new ones, and implemented major revisions for 3 courses. Initiated and led major changes in computer science in various leadership capacities, such as leading revisions in CS curriculum for aligning with the IEEE/ACM Computing Curriculum recommendations. Initiated (with another CS faculty member) the idea of Senior Design in CS and sought feedback from the CS Industrial Advisory Board. As the CS Graduate Coordinator oversaw and implemented the growth of the graduate program, most notably the Ph.D. program, by 50% in 5 years.

- Participated in the development of several new programs in CS, with the most recent one in MS in Computer Vision, approved by the Board of Governors.

Service:

- Served in many leadership capacities in CS, including chairing the Undergraduate Committee for several years and implemented major changes in CS curriculum in this capacity, and led the CS graduate program as the CS Graduate Coordinator for over 5 years, leading major growth in both MS and PhD programs.
- Have been continuously serving in many leading conferences and journals, as editorial board member, organizing committee member, area chair, and technical committee member.

Recognitions and Awards

- Best paper awards in Peer-reviewed International Conferences:
  - *Best Paper award*, IEEE International Conference on Image Processing (ICIP), 2018 – ICIP is the #1 conference in the area of image processing.
  - Nominated for a *NASA Award* in Recognition of contributions to the NASA GOLD mission as the mission's Science Data Center lead.
  - *Best Scientific Paper Award* by the International Association for Pattern Recognition, in ICPR-2008. Conference acceptance rate 15%. Selected among ~1000 accepted papers.
  - *Best Paper Honorable Mention*: IEEE International Conference on Image Processing, ICIP 2005.
    Conference acceptance rate less than 20%. Selected among ~800 accepted papers.
  - *Best Paper Honorable Mention*: IEEE Int. Conf. on Acoustics, Speech, & Signal Processing, ICASSP 2005. Conference acceptance rate less than 20%. Selected among ~900 accepted papers.
- **Professional Recognition at National and International Level:**
  - *Piero Zamperoni Award*, International Association for Pattern Recognition (IAPR), 2004.
    Note on the Plaque: *"In Grateful Recognition of Contributions to the Field of Pattern Recognition"*
  - *Senior Member of IEEE*, 2000-present.
    Note on the Plaque: *"In Recognition of Professional Standing".*

- **Professional Recognition at University Level:**
  - *Three times recipient of the Research Initiative Award (RIA) (2014, 2009, 2020)*
  - *Three times recipient of the Teaching Incentive Program (TIP) Award (2013, 2008,2020)*
  - *Recipient of the CAE Link Endowed Professorship, 2018*
  - *Member of the National Academy of Innovators, 2018*
  - *Recipient of UCF Inaugural Luminary Award, 2017*
  - *Recipient of the Dean's Advisory Board Faculty Award, 2017*
  - *Recipient of CECS Excellence in Research Award, 2016,2021*
  - *UCF Millionaires Club (2016, 2015, 2014, 2013) – Program stopped after 2016*

- *Three times recipient of Excellence in Research Award of the College of Engineering and Computer Science (2006, 2014, 2021)*
- *Distinguished Researcher of the School of Electrical Engineering and Computer Science in 2005,*
- *My first PhD student at UCF won the Outstanding Dissertation Award of CECS (runner up at the university level).*
- *Distinguished Researcher*: UCF College of Engineering and Computer Science, 2005 – 2006
- *Distinguished Researcher*: UCF School of Electrical Engineering and Computer Science, 2004 – 2005.

Bridging Research and Education

Continuously developing course materials to bring state-of-the-art research into my graduate courses, emphasizing on inter-disciplinary research to create opportunities for interactions between my PhD students with other disciplines and industry.

Summary of Impact in the State of the Art

Major scientific contributions (h-index: 43, i10-index 149):

- **Deep Learning:** I have made several major contributions that are highly cited. My focus in deep learning has been in three main areas of efficient learning models (e.g. sparse models), few-shot and zero-shot methods, confluence of natural language processing and computer vision, and adversarial methods. In particular, I co-authored with two of my PhD students a paper on sparse convolutional neural networks that was the first paper on this subject in the discipline appearing in CVPR 2015. Previous works were focused on "rank" rather than true sparseness. This is one of the most cited papers on the subject of sparse convolutional neural networks. My team is currently working on two main thrusts: A new theory of learning, where we have proven that learning can be modeled as a ranking problem in the form of "unsupervised conformal ranking", and a new model for "knowledge distillation", where a sparse shallow network (agent) can clone the behavior of a dense deep network (agent).

- **Reconstructive Recognition in Computer Vision:** These publications (2008-2016), supported mostly by the National Science Foundation (NSF), focused on the connection between reconstruction and recognition, by exploring: (i) Multiple view constraints, (ii) sparsity of signals due to underlying structures, (iii) "Big Data" analytics, e.g. learning group-sparse behaviors of large collections of data (images, text, video, and metadata), (iv) subspace clustering and deep learning. Strong results were established in each area, notably on discovering sparse structures in big heterogeneous data (image, video, text, metadata), including new methods of higher-dimensional (tensor-based) nuclear-norm clustering, subspace clustering based on statistical sampling, and sparse representation of deep convolutional neural networks (deep learning). These were emerging areas that

promised to be disruptive in solving difficult problems such as recognition, classification, and signal/image reconstruction with performances that matched or exceeded humans.

- **3D from Multiple Views:** Mostly funded by NSF and industry, my publications in this area (2000-2007) spanned three main aspects of (i) recovering camera geometry (calibration, pose, and geo-localization), (ii) recovering the 3D structure (metrology) without requiring explicit 3D reconstruction; and (iii) recovering new camera viewpoints from existing images (view morphing). Specific applications that also emerged from these works included video post-production and more specifically image-based rendering for applications such as "augmented" or "diminished" reality, while taking into account photo-realistic video editing for shadows and reflections. Other specific problems that were studied included photo-realistic image-based rendering of gaseous material (e.g., liquids, smoke, fire, etc.). Some specific significant low-level signal/image processing problems that were solved while working on these image-based rendering problems included the phase shifting and representation of motion in the phase domain, and more specifically in the Haar wavelet domain. The latter was further studied in the context of super-resolution by a doctoral student in my research group.

- **Image Restoration and Enhancement:** My earliest publications (1993-1999) were focused on the problem of super-resolution (SR), which consists of methods of recovering high resolution information from a sequence of low-resolution images. My work was the natural extension to the original pioneering work in this area by Irani, Peleg, Keren, and Werman in 1980's based on the concept of back-projection, but I made three major contributions: (i) detailed theoretical analysis of the super-resolution problem in terms of non-uniform sampling theory and the analysis of the theoretical and practical limits of both multi-view and single-view methods; (ii) I casted the SR problem for the first time as that of designing a Bayesian estimator to maximize the posterior distribution of the unknown high-resolution image, introducing thus the role of *a priori* information in enhancing image resolution, while making the ill-posed inverse problem stable to converge; (iii) My work was also the first body of work in the literature to consider 3D super-resolution, i.e. reconstructing SR data for both photometric and geometric information from a sequence of low-resolution images. Later these results were extended to work directly on video data (e.g., MPEG encoded video sequences with arbitrary motion), which also required solving related problems such as sub-pixel registration, denoising, deconvolution, and estimation of the imaging point spread function (PSF).

- **Interdisciplinary Research:** I am a strong believer that most interesting research happen on the intersection of different disciplines.

    - The NASA GOLD mission is one of the most exciting interdisciplinary projects that I have been undertaking as its Science Data Center lead:

GOLD involves collaboration with many researchers and scientists of diverse backgrounds from different universities and institutions around the country, involving computer scientist, electrical engineers, mechanical engineers, physicists, etc. After several years of review by over 20 NASA scientists from 2005 to 2012, and several rounds of concept studies and reports, our proposal named GOLD (standing for Global-scale Observations of Limb and Disk) was finally selected in 2012 as a "NASA explorer mission of opportunity". Our multi-institution GOLD team then built a dual-channel ultraviolet imaging satellite that was shipped under special and secured protocols to Airbus site in Toulouse, France, in 2017. GOLD satellite was then mounted under the supervision of our team on a rocket head of the European Space Agency (ESA). The satellite was launched into earth's Geosynchronous Equatorial Orbit (GEO) on January 25, 2018, on an Ariane 5 rocket, which released the satellite at some predetermined altitude. After release, the satellite was powered by an ion propulsion system, and was successfully guided and positioned in its destination orbit. Since deployment in 2018, GOLD has been collecting crucial data for studying the effect of solar magnetic storms and their impact on earth, in particular in thermosphere and ionosphere.

- I have recently started some collaborative projects involving in-vitro experiments and data collection from human cell cultures for modeling of various cell culture behaviors in terms of bio-mechanical characteristics and culture environments that define the properties of secretion of extracellular vesicles in terms of both quantity and content. These studies are in the context of both restorative medicine and cancer research.

II. Education

- Doctor of Philosophy – Computer Science
  INRIA, University of Nice Sophia Antipolis, 1996
  Dissertation: *Super-Resolution in Computer Vision*

- Master of Science – Computer Science and Engineering
  University of Nice Sophia Antipolis, 1993
  Dissertation: *High-Resolution Reconstruction of Albedo and Height*

- Master of Science – Electrical Engineering
  Kingston University, U.K., 1990
  Emphasis: *Digital Computer Systems*

- Bachelor of Science – Electrical Engineering with High Honors
  Kingston University – U.K., 1989

III. Professional Experience

2002 – Present: University of Central Florida – Orlando, Florida

Department of Computer Science

- *CAE Link Professor of Computer Science*: 2018-present
- *Professor*: 2015-present
- *Associate Professor*: 2008 – 2015
- *Assistant Professor*: 2002 – 2008
- Graduate Program Coordinator, Computer Science: 2010 – 2015
- *Joint Appointment,* Department of Electrical and Computer Engineering (ECE): 2003 – present
- *Affiliated faculty,* Institute for Simulation and Training (IST): 2008 – present

Principal Investigator (PI) or co-PI for funded research with my credit totaling ~$14.5M, with an additional $700K already approved for the next year. Over 97% of grants have been federally sponsored from the most competitive sources, including the *National Science Foundation (NSF)*, the *National Aeronautics and Space Administration* (*NASA)*, the *Office of Naval Research (ONR), and the Defense Intelligence Agency (DIA)*. Graduated 24 Ph.D. students and 13 Master students. Five of the graduated Ph.D. students have secured full-time faculty positions, and others have secured research positions in either national laboratories or major high-tech companies. Taught 9 different courses, developed 2 new courses, and implemented major revisions for 3 courses in the last 20 years.

Served as the Director of the Graduate Program in the Department of Computer Science at UCF (2010-2015). Served as the Associate Editor of the IEEE Transactions on Image Processing (2011-2016, 2003-2008). Currently, serving as a voting member in the IEEE Multimedia Communications Technical Committee (MMTC). Holding joint appointments with the

Department of Electrical and Computer Engineering, the Modeling and Simulation Program, and the Institute for Simulation and Training. Served as the Chair of the Undergraduate Committee and the Chair of the Curriculum Oversight and Review Committee and the ABET assessment for the Computer Science Division. Served as member of the College of Engineering and Computer Science (CECS) Computing Committee, CECS ABET Committee, and in the Academic committee for the Modeling and Simulation Program.

2000-2002: University of California, Berkeley – Berkeley, California
Senior Research Scientist
Served as the Technical Coordinator of a Multi-University Research Initiative (MURI) funded by the Office of Naval research - principal research scientist on the same project. Conducted research in multi-sensor acquisition of data for autonomous 3D modeling and visualization of dynamic scenes and urban environments. Developed sensor fusion models and computation approaches for electro-optical imaging, laser scanners, inertial navigation systems, aerial and satellite imagery, and LIDAR data. Conducted research on photo-realistic modeling and visualization of dynamic scenes for simulation and training.

1997 – 2000: University of Maryland, College Park – College Park, Maryland
Assistant Research Scientist, Center for Automation Research (CfAR) and the University of Maryland Institute for Advanced Computer Studies (UMIACS)
Research scientist on a MURI project, funded by the Office of Naval Research. Conducted research on super-resolution of video data, Synthetic Aperture Radar (SAR), and Foliage Penetrating (FOPEN) SAR images, blind equalization of video data, inverse diffusion techniques, image registration, video stabilization, target detection, and tracking in video and infrared sequences. Working on various sensory systems including electro-optical (EO), infrared (IR), and SAR.

1993 – 1996: INRIA, Sophia Antipolis, France (French National Institute for Research on Informatics and Control)
Research Assistant, in the Scene Analysis and Symbolic Image Processing Group
Research on super-resolution, modeling reflectance maps and physics of the imaging process for shape perception from remotely sensed data, Bayesian estimation of high-resolution 3D data, registration, sampling theory and optimization techniques. Work applied to multi-spectral satellite images of the European SPOT satellite and airborne electro-optical data. Work involved direct collaboration with the French National Space Agency (CNES). Two main software methods on super-resolution and registration of multi-spectral satellite images were patented and transferred to CNES.

1990 – 1992: Innovative Engineering Solutions Ltd., London, U.K.
R&D Engineer
Designed and developed a new generation of product lines for distributed networked security and safety systems.

IV. Research

A. Funded Research Projects

Received funding as the PI or co-PI, with credit of ~$14.5M. An additional ~700K already approved for the next two years by NASA:

- 100% continuous funding
- 98% federally sponsored projects
- Continuous collaborative interdisciplinary funding with co-PIs from CREOL, IST, FSI, UCF Psychology Department, and other universities, such as Colorado University Boulder, UC Berkeley, Harvard, etc.
- All sole-PI projects are 100% credit

1. *CIMS: Cloud Impact Mapping System*, Orlando Utilities Commission (OUC), PI, Credit: 100%, $296,889, Aug. 2023-July 2025.

    - The purpose of this project is to use computer vision and machine learning methods to perform real-time analysis of cloud coverage and cloud dynamics in order to determine their impact on solar farms. The goal is to optimize renewable power generation when switching in real-time between sources, i.e. when alternating between fossil fuel and solar energy.

2. *NASA GOLD Extended Mission Science Data Center*, NASA/LASP, PI, Credit: 100%, current and upcoming funding as of Feb. 2021: $2,805,252, 2021-2024. Further extended till 2027, with additional ~1.5M.

    - *The Extended Mission for the Global-scale Observations of the Limb and the Disc (GOLD)* is a continuation of NASA mission. The GOLD team that comprises of multiple institutions is operating a dual channel ultraviolet imaging satellite in the geostationary orbit. The team is studying geomagnetic storms and the space weather. GOLD consists of 3 main centers, one of which is the Science Data Center, led by my team in the Computer Science Department at UCF.

3. *NASA GOLD Mission Science Data Center*, NASA/LASP, PI, Credit: 100%, $2,068,000, 2018-2021.

    - *Global-scale Observations of the Limb and the Disc (GOLD)* is a NASA mission of opportunity. The GOLD team that comprises of multiple institutions put a dual channel ultraviolet imaging satellite in the geostationary orbit on January 25, 2018. Our goal is to study the coupling between sun and earth and the effect of solar magnetic storms on various layers of earth's atmosphere, e.g. ionosphere and magnetosphere. GOLD consists of 3 main centers, one of which is the Science Data Center, led by my team in the Computer Science Department at UCF.

4. *Reconstructive Recognition - Uniting statistical scene understanding and physics-based visual reasoning*, National Science Foundation (NSF), PI, Credit: 100%, $545,545, 2012-2017.

   – This project is studying the role of statistical inference from big data in constructing physical models for inference from visual information.

5. *Counter Unmanned Air System using Visible and LWIR Imaging*, Photon-X Corporation, PI, Credit: 100%, $60,019, 2017-2018.

   – This project is studying sensor fusion for automatic target recognition..

6. *Polarized and Stereo Imaging for 3D Modeling,* BRIDG, PI, Credit: 100%, $217,659, 2018-2019.

   – This project is studying the role of polarization in 3D reconstruction and machine understanding of natural scenes.

7. *FHTC: Counter Unmanned Air System using Visible and LWIR Imaging*, Florida High-Tech Corridor, PI, Credit: 100%, $20,000, 2017-2018.

8. *Adaptive Compressed Entropy Sensing*, Defense Intelligence Agency (DIA) / Naval Postgraduate School (NPS), PI, Credit: 100%, $182,985, 2013-2014.

   – This project is studying the role of sparse sampling in reducing data.

9. *GOLD: Global-scale Observations of the Limb and the Disc*, NASA, Stand-Alone Mission of Opportunity, Co-PI, Credit: 12% = $7.6M (Total Grant: $55M), 2013-2020.

   – This is the largest single grant in the history of UCF. Also, the first stand-alone mission granted by NASA to a state university. The goal of this project is to develop hardware/software for investigating magnetic storms caused by the sun using a dual channel ultraviolet imaging system in a geostationary satellite. GOLD is a perfect example of "Big Data" for discovering science. Once launched in 2017, it will produce unprecedented amount of data (petabytes) for modeling and understanding the physics of interaction between solar magnetic storms and the ionosphere and other layers of atmosphere.

10. *Learning-Based Systems for Single-Image Photometric Reconstruction*, National Science Foundation (NSF), PI, Credit: 100%, $363,005, 2010-2014.

    – This project was studying methods of recovering 3D information from a single view.

11. *Super-Resolution of Compressive Hyperspectral Imaging*, Florida Space Research Initiative, Sole-PI, Credit: 100%, $48,632, 2013-2014.

- This project is studying underlying sparseness of hyperspectral data and the cross-channel correlations to recover high resolution date using a low resolution sensor.

12. *Airborne Multisensor Visual Data Processing*, Jackson Technologies, Inc. PI, Credit: 100%, $202,641, 2012-2018.

    - This project is studying automated methods of reconstructing 3D panoramic models around a flying aircraft.

13. *Rapid Automated 3D Terrain Modeling from Airborne Data*, Florida High Tech Corridor (FHTC), PI, Credit: 100%, $73,434, 2013-2018.

    - This project is studying automated methods of reconstructing 3D models of a terrain from a flying aircraft.

14. *Global-scale Observations of the Limb and the Disc (GOLD-SALMON)*, NASA, concept study phase, Co-PI, $342,500, 2012-2013.

    - The concept study phase for GOLD mission.

15. *Networked Immersive Technologies for Training*, ProActive Technologies, Inc., PI, Credit: 100%, $40,000, 2012-2014.

    - This project is studying distributed immersive technologies for training and simulation.

16. *Seeing Through with Augmented Reality*, Florida High Tech Corridor, PI, Credit: 100%, $13,333, 2012-2013.

    - This project studied a new concept of augmenting appearance of objects in the field of view of a user.

17. *SMEX: GOLD Imager*, NASA, concept study phase, Co-PI, ~ $246,450, 2008-2010.

    - The goal of this project was to design and develop an ultraviolet imaging system and the supporting instruments that would be launched in a geostationary orbit for investigating magnetic storms.

18. *Global-scale Observations of Limb and Disc (GOLD)*, NASA, extension to phase A, ~ $499,989, Co-PI, 2008-2009.

    - The goal of this project was to develop algorithms for analysis of magnetic storms caused by the sun by simulating images obtained by a two-channel ultraviolet system in a geostationary satellite.

19. Modeling and Tracking Human Activities in Sport Events, Electronic Arts – Tiburon, $30,000, PI, Credit: 100%, 2008-2009.

    - The goal of this project was to develop algorithms for tracking and recognition of human activities in sports events, and construct the statistics of players' performance.

20. VAST: Video Analysis for Sports Training, FHTC, $15,000, PI, Credit: 100%, 2008-2009.

    - The goal of this project was to evaluate the role of video technologies for training in sports and for assisting coaches in the training process.

21. *Rapid Terrain Modeling for Synthetic Environments*, Florida High-Tech Corridor, $13,400, PI, Credit: 100%, 2007-2008

    - This project developed algorithms for modeling and rendering terrains using laser scanning and video data.

22. *Network of Surveillance Cameras with Active Zoom and Dynamic Topology*, National Science Foundation (NSF), $100,000, PI, Credit: 100%, 2006-2008

    - This project developed algorithms for a network of non-overlapping cameras for the analysis of activities.

23. *Global-scale Observations of Limb and Disc (GOLD)*, NASA, phase A funded for $999,707, Co-PI, 2006-2007.

    - The goal of this project was to perform a concept study for developing methods and algorithms to be used for analysis of magnetic storms caused by the sun using simulation of images obtained by a two-channel ultraviolet system in a geostationary satellite.

24. *Reconfigurable Network of Cameras*, I2Lab Matching funds, $5,000, PI, Credit: 100%, 2006-2007

    - This project developed algorithms for camera self-calibration of a camera network for wide area surveillance.

25. *Video Analysis Techniques for Terrain Modeling and Automated Texture Mapping,* Electronic Arts – Tiburon, $20,000, PI, Credit: 100%, 2006-2007

    - This project developed algorithms for modeling and visualization of natural terrains using laser scanning and video data.

26. *Modeling and Visualization of Musculoskeletal Structures in Dental CT-Scan*, Imaging Sciences International, Inc., $14,000, PI, Credit: 100%, 2006-2007

- This project developed algorithms for 3D modeling and visualization of maxilla and mandible of patients of dental surgery using Computer Aided Tomography (CAT) scanning.

27. *Intravascular Photonics Catheter Design,* Florida Photonic Center of Excellence, $31,164 Co-PI, 2005-2006.

    - This project developed a miniaturized catheter for intravascular imaging and analysis of risks of stroke and heart diseases.

28. *Intravascular Photonics Catheter Design,* Florida Photonic Center of Excellence, $31,695 Co-PI, 2005-2006.

    - This project developed a miniaturized catheter for intravascular imaging and analysis of risks of stroke and heart diseases.

29. *Intravascular Photonics Catheter Design,* Florida Photonic Center of Excellence, $118,836 Co-PI, 2004-2005.

    - This project developed a miniaturized catheter for intravascular imaging and analysis of risks of stroke and heart diseases.

30. *Intravascular Photonics Catheter Design,* Florida Photonic Center of Excellence, $18,305 Co-PI, 2004-2005

    - This project developed a miniaturized catheter for intravascular imaging and analysis of risks of stroke and heart diseases.

31. *Mixed Reality Anytime Anywhere*, DURIP, Office of Naval Research, $351,000, Co-PI, 2004-2005.

32. Academic Excellence Grant, Sun Micro Systems, $138,000, PI, Credit: 100%, 2004-2005.

    - The purpose of this project was laboratory enhancement for education.

33. *Academic Excellence Grant*, Sun Micro Systems, $55,000, PI, Credit: 100%, 2003-2004.

    - The purpose of this project was establishment of a laboratory for education in the areas of simulation and training.

34. *Improved Tracking for Scientific and Creative Research in Mixed Reality*, $27,000, Co PI, UCF Presidential Equipment Award, 2003-2004.

B. Peer Reviewed Journal Publications

1. M.H. Maqbool, A.B. Siddique and Hassan Foroosh, *Model-Agnostic Zero-Shot Intent Detection via Contrastive Transfer Learning*, International Journal of Semantic Computing, 2023.

2. Hua Zhang, Liqiang Xiao, Xiaochun Cao, and Hassan Foroosh, *Multiple Adverse Weather Conditions Adaptation for Object Recognition via Causal Intervention*, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 2022.

3. Amir Emad Marvasti, Ehsan Emad Marvasti, Ulas Bagci, Hassan Foroosh, *Maximum Probability Theorem: A Framework for Probabilistic Machine Learning*, IEEE Transaction on Artificial Intelligence (TAI), doi: 10.1109/TAI.2021.3086046, 2021.

4. Amir Rouhollahi, Olusegun Ilegbusi, Hassan Foroosh, *Segmentation and Pore Structure Estimation in SEM Images of Tissue Engineering Scaffolds Using Genetic Algorithm*, Annals of Biomedical Engineering, Biomedical Engineering Society, Vol. 49, pages 1033–1045, Springer, 2021.

5. Vildan Atalay Aydin, Hassan Foroosh, Wavelet-Based Super Resolution of Downsampling-Based Compressed Video, International Journal of Wavelets, Multiresolution and Information Processing, World Scientific Publishing Company, doi: 10.1142/S0219691321500259, 2021.

6. Sumit Laha, Rodney LaLonde, Austin E. Carmack, Hassan Foroosh, John C. Olson, Saad Shaikh, Ulas Bagci, Analysis of Video Retinal Angiography with Deep Learning and Eulerian Magnification, Frontiers in Computer Science, vol.2, issue 24, doi: 10.3389/fcomp.2020.00024, 2020.

7. Amir Rouhollahi, Olusegun Ilegbusi, Stephen Florczyk, Kailei Xu, Hassan Foroosh, *Effect of Mold Geometry on Pore Size in Freeze-Cast Chitosan-Alginate Scaffolds for Tissue Engineering*, Annals of Biomedical Engineering, Biomedical Engineering Society, volume 48, pages1090–1102, Springer, 2020.

8. R. W. Eastes, W. E. McClintock, A. G. Burns, D. N. Anderson, L. Andersson, S. Aryal, S. A. Budzien, X. Cai, M. V. Codrescu, J. T. Correira, R. E. Daniell, K. F. Dymond, S. L. England, F. G. Eparvier, J. S. Evans, H. Foroosh, Q. Gan, K. R. Greer, D. K. Karan, A. Krywonos, F. I. Laskar, J. D. Lumpe, C. R. Martinis, J. B. McPhate, J. Oberheide, O. H. Siegmund, S. C. Solomon, V. Veibel, T. N. Woods, *Initial Observations by the Global-scale Observations of the Limb and Disk (GOLD) mission*, Journal of Geophysics Research, Space Physics, Wiley, doi:10.1029/2020JA027823, 2020.

9. Kristian Damkjer, Hassan Foroosh, *Lattice-Constrained Stratified Sampling for Point Cloud Levels of Detail*, IEEE Transactions on Geoscience and Remote Sensing, 2020.

10. Adeel Bhutta, Imran Junejo, Hassan Foroosh, *Selective Subtraction for Handheld Cameras*, IEEE Access, 2020.

11. Hua Zhang, Peng She, Yong Liu, Xiaochun Cao, Hassan Foroosh, *Learning Structural Representations via Dynamic Object Landmarks Discovery for Sketch Recognition and Retrieval*, IEEE Transactions on Image Processing, 2019.

12. Yang Zhang, Philip David, Boqing Gong, Hassan Foroosh, *A Curriculum Domain Adaptation Approach to Semantic Segmentation of Urban Scenes*, IEEE Transaction on Pattern Analysis and Machine Intelligence (PAMI), 2019.

13. Maryam Jaberi, Marianna Pensky, and Hassan Foroosh, *Sparse One-Grab Sampling with Probabilistic Guarantees*, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 2018.

14. Amara Tariq and Hassan Foroosh, *Designing a Symmetric Classifier for Image Annotation using Multi-Layer Sparse Coding*, Image and Vision Computing (IVC), vol. 60, pp. 33-43, 2018.

15. Vildan Atalay and Hassan Foroosh, *A Linear Well-Posed Solution to Recover High-Frequency Information for Super Resolution Image Reconstruction*, Multidimensional Systems and Signal Processing, Springer, 2017.

16. Vildan Atalay and Hassan Foroosh, *In-band Sub-Pixel Registration of Wavelet-Encoded Images from Sparse Coefficients*, Signal, Image and Video Processing, vol. 11, issue 8, pp 1527-1535, 2017.

17. Brian Millikan, Aritra Dutta, Qiyu Sun and Hassan Foroosh, *Fast Detection of Compressively Sensed IR Targets Using Stochastically Trained Least Squares and Compressed Quadratic Correlation Filters*, IEEE Transactions on Aerospace and Electronics Systems, vol. 53, issue 5, pp. 2449-2461, 2017.

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    This was the culmination of the study associated with the ABET accreditation, where I had a major contribution as the Chair of the CS Undergraduate Committee.

107. Adeel A. Bhutta and Hassan Foroosh, *Blind Blur Estimation Using Low Rank Approximation of Cepstrum*, vol. 1, pages 94-103, 2006.

108. X. Cao, J. Xiao, M. Shah, and H. Foroosh, *Single View Compositing with Shadows*, Pacific Graphics, pages 639-648, 2005. (acceptance rate less than 14%)

109. M. Balci, H. Foroosh, *Estimating Sub-Pixel Shifts Directly From Phase Difference*, Proceedings of IEEE Int. Conf. on Image Processing (ICIP), Honorable Mention, vol. 1, pages 1057-1060, 2005. **(Best Paper Honorable Mention)**.

110. M. Balci, H. Foroosh, X. Cao, *Metrology in Uncalibrated Images Given One Vanishing Point*, Proceedings of IEEE Int. Conf. on Image Processing (ICIP), vol. 3, pages 361-364, 2005.

111. A. Bhutta and H. Foroosh, *On Combining Encryption for Multiple Data Streams*, Proc. Of IEEE International Multi Topic Conference, 2005.

112. M. Balci, H. Foroosh, *Inferring Motion from the Rank Constraint of the Phase Matrix*, Proceedings of IEEE International Conf. on Acoustic Speech & Signal Processing (ICASSP), Vol. II, pages 869-872, 2005. **(Best Paper Honorable Mention)**.

113. M. Balci, H. Foroosh, X. Cao, *Self-Calibrated Reconstruction of Partially Viewed Symmetric Objects*, Proceedings of IEEE International Conf. on Acoustic Speech & Signal Processing (ICASSP), 2005.

114. X. Cao and H. Foroosh, *Camera Calibration without Metric Information Using an Isosceles Trapezoid*, Proceedings of the IAPR International Conf. On Pattern Recognition (ICPR), Volume 1, pages 104-107, 2004. **(Best Paper Award)**

115. H. Foroosh and M. Balci, *Subpixel Registration and Estimation of Local Shifts Directly in the Fourier Domain*, Proceedings of IEEE International Conference on Image Processing (ICIP), Volume: 3, pages: 1915- 1918, 2004.

116. H. Foroosh, *An Adaptive Scheme for Estimating Motion*, Proceedings of IEEE International Conf. on Image Processing (ICIP), Volume 3, Pages:1831-1834, 2004.

117. T. Fu and H. Foroosh, *Expression Morphing from Distant Viewpoints*, Proceedings of IEEE International Conf. on Image Processing (ICIP), Volume: 5, page(s): 3519- 3522, 2004.

118. X. Cao and H. Foroosh, *Camera Calibration Without Metric Information Using 1D Objects*, Proceedings of IEEE International Conf. on Image Processing (ICIP), Volume 2, Pages: 1349 – 1352, 2004.

119. X. Cao and H. Foroosh, *Easy Camera Calibration Using Inter-Image Homographies*, IEEE CVPR, Image and Video Registration workshop, 2004.

120. X. Cao and H. Foroosh, *Metrology from Vertical Objects*, Proceedings of British Machine Vision Conference (BMVC), 2004. (Acceptance rate 33%)

121. H. Foroosh, *Adaptive Estimation of Motion Using Generalized Cross Validation*, IEEE CVPR International Workshop on Statistical & Computational Theory of Vision, 2003.

122. H. Foroosh, *A Closed-Form Solution For Optical Flow By Imposing Temporal Constraints*, Proceedings of International Conference on Image Processing (ICIP), vol. 3, pages 656-659, 2001.

123. C. Früh, J. Flynn, H. Foroosh, and A. Zakhor, *Fast 3D model generation for urban environments*, Workshop on the Convergence of Graphics, Vision, and Video (CGVV'01), Berkeley, March 2001

124. H. Shekarforoush (Foroosh) and R. Chellappa, *A Multi-fractal Formalism for Stabilization, Object Detection and Tracking in FLIR Sequences*, International Conference on Image Processing, vol. 3, pp. 78-81, 2000.

125. H. Shekarforoush (Foroosh) R. Chellappa, *A Multi-fractal Formalism For Stabilization And Activity Detection in FLIR Sequences*, Proc. Annual Federated Laboratory Symposium, vol. Advanced Sensors, February 2000.

126. H. Shekarforoush (Foroosh) and R. Chellappa, *Super-resolution for Multi-look SAR Imagery*, Proc. Annual Federated Laboratory Symposium, vol. Advanced Sensors, pp. 313-317, College Park, Feb. 1999.

127. H. Shekarforoush (Foroosh) and R. Chellappa, *Multi-channel Super-resolution for Video Sequences with Application to Airborne Video Data*, Proc. 10th Image and Multi-dimensional Digital Signal Processing Workshop, pp. 207-210, Alpbach, Austria, July 1998.

128. H. Shekarforoush (Foroosh) and R. Chellappa, *Blind Estimation of PSF for Out of Focus Video Data*, vol. 3, pp. 742-745, Proc. International Conference on Image Processing (ICIP), Chicago, Oct. 1998.

129. H. Shekarforoush (Foroosh), J. Zerubia and M. Berthod, *Denoising by Extracting Fractional Order Singularities*, Proc. International Conference on Acoustics, Speech and Signal Processing (ICASSP), vol. 5, pp. 2889-2892, Seattle, May 1998.

130. A. Lorette, H. Shekarforoush (Foroosh) and J. Zerubia, *Super-resolution with Adaptive Regularization*, Proc. International Conference on Image Processing (ICIP), vol. 1, pp. 169-172, Santa Barbara, Oct. 1997.

131. A. Lorette, H. Shekarforoush (Foroosh) and J. Zerubia, *Prise en Compte des Discontinuités Dans un Algorithme de Super-résolution*, Proc. GRETSI, pp. 1217-1220, Grenoble, France, Sept. 1997.

132. H. Shekarforoush (Foroosh), M. Berthod, J. Zerubia, *A Generalization of the Non-linear Simplex Search Method*, 5th SIAM Conference on Optimization, 1996. (Acceptance rate 19%)

133. H. Shekarforoush (Foroosh), M. Berthod and J. Zerubia, *Subpixel Image Registration by Estimating the Polyphase Decomposition of the Cross Power Spectrum*, Proc. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), pages 532-537, 1996.

134. H. Shekarforoush (Foroosh), M. Berthod and J. Zerubia, *3D Super-resolution Using Generalized Sampling Expansion*, Proc. International Conference on Image Processing (ICIP), vol. 2, pages. 300-303, Washington D.C., Oct. 1995.

135. H. Shekarforoush (Foroosh), M. Berthod and J. Zerubia, *Sub-pixel Reconstruction of a Variable Albedo Lambertian Surface*, Proc. British Machine Vision Conference (BMVC), vol. 1, pages. 307-316, Birmingham, U.K., Sept. 1995. (Acceptance rate 33%)

136. M. Berthod, H. Shekarforoush (Foroosh), M. Werman and J. Zerubia, *Reconstruction of High Resolution 3D Visual Information*, Proc. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), pages. 654-657, 1994.

E. Conference Articles Under Preparation or Under Review

1. Dongqiangzi Ye, Yufei Xie, Weijia Chen, Zixiang Zhou, Lingting Ge, Hassan Foroosh, *LPFormer: LiDAR Pose Estimation Transformer with Multi-Task Network*, International Conference on Robotics and Automation, 2024.

2. Zixiang Zhou, Dongqiangzi Ye, Weijia Chen, Yufei Xie, Yu Wang, Panqu Wang, Hassan Foroosh, *LiDARFormer: A Unified Transformer-based Multi-task Network for LiDAR Perception*, International Conference on Robotics and Automation, 2024.

F. Book Chapters

1. Ankit Sharma, Pooyan Balouchian, Hassan Foroosh, *A Novel Multi-Purpose Deep Architecture for Facial Attribute and Emotion Understanding*, Lecture Notes in Computer Science, Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications, Volume 11401, Springer, 2019.

2. H. Foroosh and S. Hoge, *Motion Information in the Phase Domain*, in Video registration, Kluwer Academic Publishers, May 2003.

G. Other Publications

1. H. Shekarforoush (Foroosh), A. Banerjee and R. Chellappa, *Super-resolution for FOPEN SAR Images*, Proc. SPIE-International Society for Optical Engineering, vol. VIII, Orlando, pp. 129-135, April 1999.

2. H. Shekarforoush (Foroosh), *Conditioning Bounds for Multi-frame Super-resolution Algorithms*, CfAR Technical Report TR4001, UMD, 1999.

3. H. Shekarforoush (Foroosh) and R. Chellappa, *Adaptive Super-resolution for PREDATOR Video Sequences*, Proc. Image Understanding Workshop, vol. II, pp. 995-1001, Monterey, 1998.

4. H. Shekarforoush (Foroosh) and R. Chellappa, *Data-driven Multi-channel Super-resolution with Applications to Video Sequences*, CfAR Technical Report TR3898, UMD, 1998.

5. H. Shekarforoush (Foroosh), M. Berthod, and J. Zerubia, *Reconstruction of High Resolution 3D Visual Information*, INRIA Technical Report, 1996.

6. H. Shekarforoush (Foroosh), M. Berthod and J. Zerubia, *Subpixel Image Registration by Estimating the Polyphase Decomposition of the Cross Power Spectrum*, INRIA Technical Report, 1996.

7. H. Shekarforoush (Foroosh), M. Berthod, J. Zerubia, *A Generalization of the Non-linear Simplex Search Method*, INRIA Technical Report, 1996.

H. Literature Citations

- Recent *h*-index: 43
- Recent i10-index: 149
- My publications have been cited in premier journals including:
  - *IEEE Transactions on Pattern Analysis and Machine Intelligence* (#1 journal in Computer Vision)
  - *IEEE Transactions on Image Processing* (#1 journal in Image Processing)
  - *IEEE Transactions on Systems, Man, and Cybernetics*
  - *IEEE Transactions on Circuits and Systems for Video Technology*
  - *Computer Vision and Image Understanding* (Ranked as #2 journal in Computer Vision)
  - *International Journal of Computer Vision* (Ranked also as the #2 journal in Computer Vision)
  - *Journal of Vision and Image Computing*
  - *Journal of Mathematical Imaging and Vision*
  - *Pattern Recognition*
  - *Pattern Recognition Letters*
  - *Optics Express* (#1 journal in Optics)
  - *Optics Letters* (also considered as #1 journal in Optics)
  - *Journal of the Optical Society of America-A*

  in addition to other journals, conference proceedings, and workshops.

I. Patents and Invention Disclosures

1. *System for Detecting Sterile Field Events and Related Methods*, Gregory Welch, Arjun Nagendran, Jason Hochreiter, Laura Gonzalez, and Hassan Foroosh, US 9,808,549B2, 2017.
2. *Methods for Recognizing Pose and Action of Articulated Objects with Collection of Planes in Motion*, Yuping Shen and Hassan Foroosh, US 8,755,569 B2, 2014.

3. *Hybrid Differential Compressive Sensing Imager*, Nabeel Riza and Hassan Foroosh, Provisional Patent Disclosure, US 8,587,686 B1, 2013.
4. *Systems and Methods for Designing Optical Surfaces*, Patent pending, Ozan Cakmakci, Brendan Moore, Hassan Foroosh, and Jannick Rolland, US 2009/0228251A1, 2009.
5. *"SURPRISE"* (*SUper-Resolution de la Photometrie et de la Radiometrie des Images Satellites Entrelacees*), super-resolution of photometry and radiometry of interlaced satellite images, European Patent, 1996.
6. *"PERSIA*: Phase-based Estimation and Registration for Subpixel Image Alignment: European Patent, 1996.

J. Keynote Speeches and Invited Talks

Keynote Speech:

Keynote Speaker: Fifth Solar Image Processing Workshop, Invited by NASA Goddard "*Tracking and Predicting Solar Magnetohydrodynamic Activities: An Image Processing Perspective*" Switzerland, September 2010.

Image Registration Using Directional Local Holder Regularity, 34th Conference on Information Sciences and Systems, Princeton, March 2000.

Selected Invited Talks:

- *Invited Speaker: Technical University of Munich, "Adaptive Compressive Sensing", July 2011.*
- *Invited Speaker: View Invariance and Its Role in Estimating Pose, INRIA, Sophia Antipolis France, July 2009.*
- *Geo-temporal Localization without the GPS, Department of Electrical and Computer Engineering, University of Wisconsin Madison, March, 2008.*
- *Geo-temporal Localization from Solar Information, Department of Electrical & Computer Engineering, Purdue University, April, 2008.Image-Based Modeling and Rendering*, ACM Chapter, UCF, 2003.
- *3D Modeling and Simulation of Urban Environments*, Siemens Corporate Research (SCR), Princeton, NJ, 2001.
- *A PDE-based Approach to Inverse Image Diffusion*, Dept. of Electrical and Computer Engineering, Boston University, 2000.
- *Image Deblurring by Solving the Inverse Heat Equation*, Dept. of Electrical and Computer Engineering, University of Delaware, 2000.
- *A Stable Solution to Inverse Heat Equation*, Dept. of Electrical and Computer Engineering, University of Rochester, 2000.

K. Research Laboratory Leadership

- Founder and Director (2002-present):
  Computational Imaging Laboratory – University of Central Florida, Department of Computer Science, https://cil.cs.ucf.edu
- Affiliated Faculty: *Synthetic Reality Lab. (SREAL)* – University of Central Florida, Institute for Simulation and Training, http://mcl.ucf.edu/, 2010-present.
- Affiliated Faculty:
  Media Convergence Laboratory – University of Central Florida, Institute for Simulation and Training, http://mcl.ucf.edu/, 2006-2010.
- Affiliated Faculty: *Mixed and Virtual Reality Laboratory* – University of Central Florida, School of Electrical Engineering and Computer Science, 2006-2010.

L. Interdisciplinary Research

All these interdisciplinary research involved interesting challenges of educating students to specialize but also understand other disciplines.

- Collaborators:
  - Faculty and graduate students in the All India Institute of Medical Sciences (AIIMS), New Delhi, India. The focus of collaboration is medical education and more specifically evaluating student skills in micro-neurosurgical and endoscopic surgical areas.

    Ongoing recent activity.
  - Faculty and research staff of the Florida Space Institute (FSI). Research on the intersection of space physics and image processing.

    Has led to several federally funded projects by NASA, including the largest grant in the history of UCF, called GOLD.
  - Faculty and graduate students in the Institute for Simulation and Training (IST). Research on the intersection of Computer Vision and Augmented/Mixed Reality

    Has led to one federally funded project by the Office of Naval Research (ONR), and several industry projects, all leading to publications.
  - Faculty and research staff of the Laboratory for Atmospheric and Space Physics (LASP), Colorado University at Boulder. Research on the intersection of Atmospheric and Space Sciences and image processing.

    Has led to several federally funded project by NASA.
  - Faculty and graduate students in the College of Optics and Photonics (CREOL) at UCF. Research on the intersection of bio-medical imaging and space optics.

    Has led to funded projects by NASA and the Florida's Photonic Center of Excellence.
  - Faculty and graduate students in the Institute for Computer Aided Medical Procedures and Augmented Reality, Technical University of Munich, Germany. Research on the intersection of Computer Vision and Augmented Reality in medical and surgical interventions.

Has led to summer faculty fellowships.

- Faculty and graduate students in the French National Institute for Informatics and Control (INRIA). Research on the intersection of image processing and remote sensing.

  Has led to a summer faculty fellowship, and joint publications.

M. Partnership with Industry

- Orlando Utilities Commission (OUC)
  - Collaboration on modeling and real-time analysis of clouds and their dynamics for measuring their impact on solar power generation and for optimizing renewable energy production.
- TuSimple
  - Collaboration on modeling and real-time analysis and understanding of LiDAR data for autonomous vehicles.
- Uber
  - Collaboration on modeling and tracking objects on the road for autonomous vehicles.
- Photon-X
  - Collaboration on modeling and tracking unmanned air vehicles (UAV) from stationary and mobile platforms.
- Plasmonics
  - Collaboration on the theory and application of Compressive Sensing (exploring application to Joint STARS)
- Jackson Technologies
  - Collaboration on Rapid 3D Modeling from Airborne Multi-sensor Data (exploring application to both commercial and DoD)
  - Student internships.
- ProActive Technologies
  - Collaboration on Development of Networked Immersive Environments for education and training.
- Electronic Arts (EA) - Tiburon, Orlando, FL:
  - Continuous funding of several projects since 2006
  - Internship of multiple graduate and undergraduate students and their co-advising with an industrial coordinator since 2005
- Object Video, Inc., Reston, VA:
  - Joint proposals since 2005

  - Internship of graduate students since 2005
  - Hired my first PhD student
- Advanced Micro Devices, ATI Division, Orlando, FL:
  - Several internship of graduate students since 2005
  - Hired three of my PhD students
- L3-Harris Corporation, Melbourne, FL
  - Joint proposals since 2008
  - Joint advising of a PhD student
  - Student internships
- Lockheed Martin, Orlando, FL
  - Joint advising of a PhD student
  - Student Internships
- Sun Micro Systems, CA
  - Funding of projects for laboratory enhancement for education since 2002
- Imaging Sciences International, Inc., PA
  - Funding of a project on Computer Aided Tomography (CAT) scanning, 2006

V. Teaching, Advising, and Curricular Contributions

A. Courses Taught at UCF

Taught courses in lecture, recitation, and seminar-style formats at Undergraduate (CDA3xxx, EEL3xxx) and Graduate (CAP 5xxx, CAP 6xxx, EEL5xxx) levels with approximate [typical class size] as listed:

1. CAP6419: *3D Computer Vision* [20-30]
   - 2D/3D Projective Geometry, Estimation Methods, Camera Models, Camera Calibration, Stereo Vision
2. EEL3801: *Introduction to Computer Engineering with Laboratory* [180]
   - Digital Systems, Computer architecture, Assembly Language
3. CDA3103: *Computer Organization (Architecture)* [120]
   - Computer Organization, Computer Architecture, Assembly Language
4. CDA3103: *Computer Organization (Digital Design)* [120]
   - Digital Logic Design, Combinational Logic, Sequential Logic, State Machines
5. EEL5820: *Image Processing* [20-30]
   - Image Formation, Image Representation, Spatial Domain, Transform Domain, Fourier Transform, Wavelets, Image Coding, Compression, Color Image Models
6. CAP5419: *3D Computer Vision* [20-30]
   - 2D/3D Projective Geometry, Estimation Methods, Camera Models, Camera Calibration, Stereo Vision
7. EEL5771: *Engineering Applications of Computer Graphics* [40]
   - Graphics Systems, Geometric Objects, Transformations, Viewing, Lighting and Shading, Curves and Surfaces, OpenGL programming, Discrete Techniques
8. CAP5937: *Special Topics in 3D Computer Vision* [15]
   - Camera Models, Single View Metrology, Stereo Vision, Epipolar Geometry, Planes and surfaces, Autocalibration, Multilinear methods
9. CAP6835: *Visual Simulation* [20-30]
   - 3D Modeling, Photo-realistic Rendering, Image-Based Rendering, Light-Field Rendering,

Major revisions in three courses:

10. CDA3103: *Computer Organization* [120]
    - Revised and transitioned from a logic design course to an introductory course in architecture and organization, developed new material for this major revision
11. EEL3801: *Introduction to Computer Engineering* [180]

- Merged EEL3801 and CDA3103 and developed new material for the revised course

12. CAP5419: *3D Computer Vision* [20]
    - Currently being revised to a 6000-level course and in Tegrity online format, which will integrate research with course content

B. Courses Taught at University of Maryland, College Park

Taught courses in lecture format at upper-level Undergraduate (ENEE-4xx) and Graduate (ENEE-6xx) levels, in the Department of Electrical and Computer Engineering with [class size] as listed:

1. ENEE-425: *Digital Signal Processing* [60]
    - Digital Systems, Computer architecture, Assembly Language

2. ENPM-603: *Advanced Digital Signal Processing* [60]
    - Computer Organization, Computer Architecture, Assembly Language

C. New Program Development and Curriculum Enhancement

- Course Development
    - University catalog additions: CAP 5419 and CAP6835 as sole developer
    - Participated in curriculum development to support a new degree program in bioinformatics (program did not take off at that time because of logistic issues).
    - Participated in curriculum development to support a new Professional Master's degree program
    - Key participant in curriculum development to support a new Master's degree program in Computer Vision
- Laboratory Development
    - Obtained $544,000 in laboratory infrastructure grants as PI or Co-PI from federal sources and industry. Resources include network graphic servers, workstations, high-end long range laser scanning system, close-range laser scanning system, tracking systems, structured lighting system, various cameras including progressive scan, PTZ, Electro-Optical, and Infrared
    - Founder and Director: Computational Imaging Laboratory (CIL)
    - Faculty member and contributor to the Media Convergence Laboratory (MCL), Institute for Simulation and Training (IST)
    - Affiliated Faculty member of the Synthetic Reality Lab.
    - Revised material for the labs of CDA3103, and EEL3801

- Assessment and Accreditation
  - Assessments of MS and PhD programs in CS as the Graduate Coordinator, since 2010.
  - Participation in the annual Computing Research Association (CRA) meeting for exchange of ideas with peer leaders from institutions, since 2013.
  - Accreditation Coordinator for Accreditation Board for Engineering and Technology (ABET) for Computer Science
  - Initiated mapping of all Computer Science courses to IEEE/ACM Curriculum 2001, when chairing the Computer Science Undergraduate Committee
  - Chair of Computer Science Curriculum Oversight and Review Committee (CS CORC)
  - Member of Computer Engineering Curriculum Oversight and Review Committee (CpE CORC)
  - Member of the UCF Undergraduate Performance Assessment Committee (UPAC)
  - ABET course custodian for CDA3103/EEL3801, CAP5419, CAP6835

- Integration of Research and Teaching
  - All external funding have included strong educational components to advise graduate independent studies and inter-disciplinary research, and to introduce new material in the graduate and undergraduate curriculum
  - Mentored and advised students for the DARPA Grand Challenge for design and building of an autonomous vehicle including computer vision and laser scanning systems for navigation in a desert environment, 2005.
  - Mentored and advised students for the DARPA Urban Challenge for design and building of an autonomous vehicle including computer vision and laser scanning systems for navigation in a fake city environment, Team UCF, Knight Rider finished 7th, 2007.
  - Advised and mentored graduate and undergraduate students in partnership with local industry such as the Electronic Arts, Harris, Lockheed Martin, AMD/ATI, ProActive Technologies, and Jackson Technologies involving internship placements for students, 2004-present
  - Organized an I2Lab forum hosting several keynote speakers and a poster session for graduate or undergraduate research with over 100 student poster participation.
  - Provided oversight to student activities and awards in IEEE Workshop on Motion and Video Computing, 2002.
  - Provided oversight to student activities and awards in IEEE Workshop on Motion and Video Computing, IEEE Workshop on Applications of Computer Vision, 2002.

D. Post-Doctoral Research Advised

Dr. Shu Chen:

- Visiting during 2013-2014.
- Research on 3D human motion tracking.
- Associate Professor, Xiangtan University, Hunan, China

Dr. Lei Wang:

- Visiting during December 2011- November 2012.
- Research on facial expression recognition and modeling using appearance based models.
- Associate Professor, Central South University, Changsha, China

Dr. Farshideh Einsele:

- Joined my group for a year from Fribourg University in Switzerland during 2008-2009.
- Research involved character and text extraction and recognition in natural scenes using Hidden Markov Models (HMM).
- Completed her postdoctoral research under my supervision in summer 2009. Now, Senior Lecturer (Associate Professor) Fernfachhochschule, Switzerland.

E. Ph.D. Students Completed

Completed 25 Ph.D. students as Dissertation Chair and Advisor:

- All hold either faculty positions or research/lead engineering positions in high tech industry
- Average time-to-degree has been 4-5 years

1. Sina Lotfian, View Invariant Point Matching with applications to Object Recognition, summer 2023.
2. Amir Emad Marvasti, Ph.D., Maximum Probability Framework and Digital Probabilistic Models, Summer 2021.

   Dr. Marvasti is currently a postdoc at Northwestern University
3. Sarah Loewy Braeger, Ph.D., Improving Matching and Classification Through Deep Learning of Structure and Varying Illumination, Spring 2021.
4. Sangwoo Cho, Ph.D., Contextual Understanding of Sequential Data Across Multiple Modalities, Spring 2021.

   Dr. Cho is a Senior Research Scientis with Tencent America.
5. Pooyan Balouchian, Ph.D., Emotion Recognition: From Context Sensitive Deep Learning to Unsupervised Ranking of Continuous Emotions, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2020.

Dr. Balouchian is the co-founder of Mapoo Solutions LLC. and Vice President of Data Science at Entertainment Benefits Group

6. Marjaneh Safaei, Ph.D., *Action Recognition in Still Images: Confluence of Multilinear methods and Deep Learning*, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2020.

   Dr. Safaei is with Dignitas Technologies.

7. Kristian Damkjer, Ph.D., *An Information-Potential Approach to Airborne LiDAR Point Cloud Sampling and Assessment*, Doctor of Philosophy, Modeling and Simulation, University of Central Florida, Spring 2020.

   Dr. Damkjer is with L3-Harris Corporation.

8. Adeel Bhutta, Ph.D., *Selective Subtraction, An Extension of Background Subtraction*, Doctor of Philosophy, Electrical and Computer Engineering, University of Central Florida, Summer 2020.

   Dr. Bhutta is an Associate Teaching Professor of Computer Science at Northeastern University, Boston, MA.

9. Yang Zhang, Ph.D., *Learning Transferable Representations for Visual Recognition*, Doctor of Philosophy, Computer Science, University of Central Florida, Spring 2020.

   Dr. Zhang is with Ali Baba AI Division.

10. Min Wang, Ph.D., *Explore and Design Novel Structures for More Efficient and Better Deep Convolutional Neural Networks*, Doctor of Philosophy, Computer Science, University of Central Florida, Spring 2020.

    Dr. Wang is with Target AI Division.

11. Brian Millikan, Ph.D., *Fast Compressed Automatic Target Recognition for a Compressive Infrared Imager*, Doctor of Philosophy, Electrical Engineering, University of Central Florida, Spring 2018.

    Dr. Millikan is with Lockheed Martin Corporation.

12. Dustin Morley, Ph.D., *Visionary Ophthalmics: Confluence of Computer Vision and deep Learning for Ophthalmology*, Doctor of Philosophy, Computer Science, University of Central Florida, Spring 2018.

    Dr. Morley is with LENSAR Corporation.

13. Maryam Jaberi, Ph.D., *On the Role of Sparsity in Deep Learning and Computer Vision*, Doctor of Philosophy, Computer Science, University of Central Florida, Spring 2018.

Dr. Jaberi is with Symantec.

14. Vildan Atalay, Ph.D., *Super-Resolution of Wavelet Encoded Images and Videos*, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2017.

    Dr. Atalay is an Assistant Professor in Namik Kemal University, Turkey

15. Syed Alam Abbas, Ph.D., *Signal Processing with Fourier Analysis, Novel Algorithms and Applications,* Doctor of Philosophy, Electrical Engineering, University of Central Florida, Summer, 2017.

    Dr. Abbas is now with Coda Octopus Group, Inc. A high Tech company specializing in underwater sonar.

16. Amara Tariq, Ph.D., *Confluence of Vision and Natural Language Processing for Cross-Media Semantic Relations Extraction*, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2017.

    Dr. Tariq initially joined The Forman Christian College, as Assistant Professor in Fall 2016. She is now a research scientist with Mayo Clinic and Arizona State University.

17. Baoyuan Liu, Ph.D., *Improving Efficiency in Deep Learning for Large Scale Visual recognition*, Doctor of Philosophy, Computer Engineering, University of Central Florida, Fall 2016.

    Dr. Liu joined Amazon, Seattle in Fall 2016.

18. Muhamad Ali, Ph.D., *A Study of Holistic Strategies for the Recognition of Characters in Natural Scene Images*, Doctor of Philosophy, Computer Science, University of Central Florida, Summer 2016.

    Dr. Ali joined The Lahore University as Assistant Professor in Fall 2016.

19. Chuan Sun, Ph.D., *View-Invariant Human Gesture and Action recognition in Video Data*, defense completed in Summer 2104, graduation scheduled for Fall 2014.

    Dr. Sun joined Amazon, Seattle, in Fall 2014. He joined JP Morgan in 2016.

20. Nazim Ashraf, Ph.D., *Study of Human Activity in Video Data with an emphasis on View-Invariance*, Doctor of Philosophy, Computer Science, University of Central Florida, Summer 2012.

    Dr. Ashraf is now an Assistant Professor in the Forman Christian College, Lahore.

21. Yuping Shen, Ph.D., *Invariants in Computer Vision and Their Application in Human Gesture and Action Recognition*, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2009.

    Dr. Shen is now an engineering staff member of Advanced Micro Devices (AMD) in the ATI division.

22. Mais Alnasser, Ph.D., *Phase-Shifting Haar Wavelets for Image-Based Rendering Applications*, Doctor of Philosophy, Computer Science, University of Central Florida, Summer 2008.

    Dr. Alnasser is now an engineering staff member of Advanced Micro Devices (AMD) in the ATI division.

23. Imran N. Junejo, Ph.D., *Towards a Self-Calibrating Video Camera Network for Content Analysis and Forensics*, Doctor of Philosophy, Computer Science, University of Central Florida, Summer 2007.

    Dr. Junejo was an Assistant Professor in Sharjah University, UAE. He is now Associate Professor in Institute of Business Administration (IBA), Karachi

24. Murat Balci, Ph.D. *Sub-pixel Registration in Computational Imaging and Applications to Enhancement of Maxillofacial CT Data*, Doctor of Philosophy, Computer Science, University of Central Florida, Fall 2006.

    Dr. Balci was an engineering staff member at Advanced Micro Devices (AMD) in the ATI division. He is now an engineering staff member of Qualcom.

25. Xiaochun Cao, Ph.D., *Multiple View Geometry for Video Analysis and Post-Production*, Doctor of Philosophy, Computer Science, University of Central Florida, Spring 2006.

    Dr. Cao was a Professor in Tianjin University, which is ranked in top 15 engineering schools in China. He is now with the Chinese Academy of Sciences, and has been recently appointed as the Dean of School of Cyber Science and Technology at Sun Yat-Sen University. His dissertation won the Outstanding Dissertation Award of the School of EECS and the College of Engineering and Computer Science (CECS) and was runner up at the university level.

F. MS Students Completed

Completed 13 M.S. students as Advisor, of which 5 continued and obtained their Ph.D. and one is currently working towards his Ph.D.:

1. Sushant Kulkarni, M.S. student, Topic: Deep Learning, Summer 2018.

2. Karan Daei-Mojdehi, M.S. student, Topic: Subspace Clustering, Spring 2018.

3. Payal Jotwani, M.S. student, Topic: *"Computerized Evaluatution of Microsurgery Skills Training"*, Completed, Fall 2015.

4. Carl Messina, M.S. student, Topic: Compressed Sampling Consensus; detection and localization of multiple structures in a high dimensional space by sampling a compressed set of points, 2013.

5. Pramod Chakrapani, M.S. student, Topic: 3D Modeling from Aerial video on a Moving platform, 2013.

6. Nazim Ashraf, *Self-Calibration of Non-overlapping PTZ Cameras*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Spring 2009.

   Mr. Ashraf is working towards his Ph.D. under my supervision.

7. Yuping Shen, *Video Compositing and Object Transfer Techniques*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Fall 2008.

   Mr. Shen continued to obtain his Ph.D. under my supervision.

8. Thomas Brendan Moore, Learning Geometry-Free Face Re-Lighting, Master of Science, Computer Science, University of Central Florida, Fall 2007.

9. Mais Alnasser, Ph.D., *Closed Form Solutions to Image-Based Rendering*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Spring 2007.

   Miss Alnasser continued to obtain her Ph.D. under my supervision.

10. Imran N. Junejo, *Self-Calibrating Camera Networks*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Spring 2006.

    Mr. Junejo continued to obtain his Ph.D. under my supervision.

11. Murat Balci, *Sub-pixel Image Alignment Techniques*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Fall 2005.

    Mr. Balci continued to obtain his Ph.D. under my supervision.

12. Xiaochun Cao, *Easy Camera Calibration Techniques*, Independent Research for M.S. degree, Computer Science, University of Central Florida, Fall 2004.

    Mr. Cao continued to obtain his Ph.D. under my supervision.

13. Tao Fu, M.S., *Expression Morphing Between Different Orientations*, Master of Science, Computer Engineering, University of Central Florida, Summer 2004.

    Mr. Fu is now a Research Engineer in the North West National Laboratory.

G. Graduate Research Exchange Students

1. Jean-Philippe Deraymond, *Facial Expression Recognition*, Visiting Ph.D. student from University of St. Etienne, France, February 2009 to July 2009.
2. Junqi Bai, *Character and Text Recognition in Video Data*, Visiting Ph.D. student from School of Electronic and Optical Engineering, Nanjing University, China, September 2009 to February 2010.

H. Current Graduate Students under Advisement

Currently advising 6 PhD students.

1. Ankit Sharma, Novel deep learning architectures, Fall 2017.
2. Zixiang Zhou, Panoptic Segmentation, Semantic Segmentation, Polarized Stereo Imaging, Fall 2018.
3. Sumit Laha, Image Dehazing, Polarized Stereo Imaging, Fall 2018.
4. Muhammad Hasan Maqbul, Deep Learning, Fall 2018.
5. Yebowen Hu, Large Language Models and Summarization, Fall 2021.
6. Aleenah Khan, Deep learning, Fall 2020.

I. Honors in Major Undergraduate Thesis Advisement

1. Steven Robertson, *Video Coding and Compression Using Curvelets and their Implementation on DSP*, started Fall 2009.
2. Christopher L. Kidwell, *The Ambient Sound Engine: A tool Built for Improving Interactive and Improvisational Performance*, Fall 2009

J. Student Recognition

- Yuping Shen and Nazim Ashraf, Best Scientific Paper Award, International Conference on Pattern Recognition, IAPR, Monetary amount $2000, 2008.
- Murat Balci, IEEE International Conference on Image Processing (ICIP), Best Paper Honorable Mention, IEEE Signal Processing Society, 2005.
- Murat Balci, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Best Paper Honorable Mention, IEEE Signal Processing Society, 2005.
- Xiaochun Cao, Outstanding Dissertation Award of the College of Engineering and Computer Science, and runner up at the university level, UCF, 2005.
- Murat Balci, I2Lab Fellowship, monetary amount $25,000, 2005.
- Xiaochun Cao, Best Paper Award, International Conference on pattern recognition (ICPR), International Association for Pattern Recognition, Monetary amount $2000, 2004.

K. Dissertation and Thesis Committee Membership

- Ph.D. Dissertation Committees:

1. Sansiri Tarnpradab, *Recurrent Neural Networks Methods for Social Media Challenges: Forum Summarization and Rumor Detection*, Summer 2022.
2. Maliha Arif, Ph.D., *Towards Leveraging Sparse Infrared datasets for Multiple View Synthesis, Few Shot Learning and Background Invariant Recognition*, Fall 2022.
3. Bruce Mcintosh, Ph.D., *Algorithms for the Detection of Resolved and Unresolved Targets in the Infrared Bands*, Fall 2022.
4. Kamran Ali, Ph.D., Optimal Feature Learning for Facial Expression Recognition, Fall 2021.
5. Mohsen Joneidi, *Representative Based Big Data Processing in Communications and Machine Learning*, Summer 2021.
6. Yandong Li, Learning Accurate and Robust Deep Visual Models, Spring 2021.
7. Eugene Taranta, *The Dollar General: Continuous Custom Gesture Recognition Techniques at Everyday Low Prices*, fall 2020.
8. Majid Noroozi, *Estimationa and Clustering in Block Models*, Summer 2020
9. Naifan Zhuang, *Differential Recurrent Neural Networks for Activity Recognition*, Spring 2020.
10. Pawan Gupta, *Solution of Linear Ill-Posed Problems using Overcomplete Dictionaries*, Fall 2019.
11. Rasika Rajapakshage, *Estimationa and Clustering in Statistical Ill-Posed Linear Inverse Problems*, Summer 2019.
12. Amir Rouhollahi, *Integration of Computational Fluid Dynamics and Machine Learning for Modeling Scaffold Pore Structure for Tissue Engineering*, fall 2019.
13. Senglee Koh, *Exploring Natural User Abstractions for Shared Perceptual Manipulator Task Modeling Recovery*, 2018.
14. Sungchul Jung, *Personalized Digital Body: Enhancing Body Ownership and Spatial Presence in Virtual Reality*, 2018.
15. Behnaz Nojavan Asgari, *Complex Affect Recognition in the Wild*, 2017.
16. Jared Bott, *The WOZ Recognizer: A Tool for Understanding User Perceptions of Sketch-Based Interfaces*, 2016.

17. Hakan Boyraz, *Human Action Localization and Recognition in Unconstrained Video*, 2013.

18. Shenghong Zhang, PhD, *Polymer Capacitive Micromachined Ultrasonic Transducer (CMUT)*, 2013.

19. Remo Pillat, PhD, *Haptic Compliance Estimation in Bilateral Teleoperation*, Fall 2013.

20. Alex Aved, PhD, *Real-Time Queries Over Streaming Video*, Spring 2013.

21. Nazar Khan, PhD Proposal/Defense, *Discriminative Dictionary Learning with Spatial Constraints*, Spring 2013.

22. Samuel Kegan, PhD Proposal/Defense, *Gradient Based MRF Learning for Image Restoration and Segmentation*, Fall 2012.

23. Syed Zain Masood, PhD Proposal/Defense, *Social Networks*, Fall 2012.

24. Jared Bott, PhD Proposal/Defense, *Understanding User Perceptions of Sketch Recognition*, EECS, Spring 2012.

25. Yugang Min, PhD Proposal/Defense, *4D CT Lung Registration and Its Application for Lung Radiation Therapy*, Spring 2012.

26. William Junek, PhD Proposal/Defense, *Forecasting Volcanic Activity Using an event Tree Analysis System and Logistic regression*, Spring 2012.

27. Jared Johnson, PhD Proposal/Defense, *Algorithms for Rendering Optimization*, Spring 2012.

28. Nicolas Beato, PhD Proposal/Defense, *Towards Real-Time Mixed Reality Matting in Natural Scenes*, Fall 2011

29. Fahad Shah, PhD Proposal/Defense, *Modeling Human Group Behaviors in Virtual Worlds*, Fall 2011.

30. Panomsak Meemon, PhD, *Development of Optical Coherence Tomography for Tissue Diagnostics*, College of Optics and Photonics (CREOL), 2010.

31. Mark Colbert, PhD, *Appearance Driven Material Design*, School of Electrical Engineering and Computer Science, UCF, 2008.

32. Ozan Cakmakci, PhD, *Off-axis Optical Design and Application to Eyeglasses Displays*, College of Optics and Photonics (CREOL), 2008.

33. Kye-Sung Lee, *Extended Focusing Range High Resolution Endoscopic Optical Coherence Tomography*, College of Optics and Photonics (CREOL), 2008.

34. Musawir Shah, *Image Space Algorithms for Real-time Realistic Rendering*, PhD, School of Electrical Engineering and Computer Science, UCF, 2007.

35. Kevin Boulanger, *Real-time Realistic Rendering of Nature Scenes with Dynamic Lighting*, PhD, School of Electrical Engineering and Computer Science, UCF, 2007.

36. Ahmet Oguz Akyuz, *Optimizing the High Dynamic Range Imaging Pipeline*, PhD, School of Electrical Engineering and Computer Science, UCF, 2007.

37. Weifeng Sun, PhD, *Wavelets in Real-time Rendering*, School of Electrical Engineering and Computer Science, UCF, 2006.

38. Erum Arif Khan, PhD, *Image Based Material Editing*, School of Electrical Engineering and Computer Science, UCF, 2005.

39. Vivek Singh, PhD, *Contributions to Automatic Particle Identification in Electron Micrographs: Algorithms, Implementations, and Applications*, School of Computer Science, UCF, 2005.

40. Dahai Guo, PhD, *Creating Geo-Specific Road Databases from Aerial Photos for Driving Simulation*, Department of Electrical and Computer Engineering, 2005.

41. Abdelhalim M. Alsharqawi, *Design and Synthesis of Clockless Pipelines Based on Self-Resetting Stage Logic*, Department of Electrical and Computer Engineering, 2005.

- Master Thesis Committee

1. Adam Cuellar, MS thesis, *Detecting Small Moving Targets in Infrared Imagery*, Fall 2020.

2. Travis Cossairt, MS thesis, *SetPad: A Sketch-Based Tool For Exploring Discrete Math Set Problems*, Spring 2012.

3. Brian M. Williamson, Master of Sciences, *REALNAV: Exploring Natural User Interfaces for Locomotion in Video Games*, School of Electrical Engineering and Computer Science, UCF, 2009.

4. Khudeja Shahbaz Khan, Master of Sciences, *Data Communication with a Nano-Satellite Using Satellite Personal Communication Networks*, Florida Space Institute, School of Electrical Engineering and Computer Science, UCF, 2008.

5. Khaled El-Said, *Biomodeling Of Congenital Cardiovascular Malformations: Feasibility And Assessment*, Dept. of Industrial Engineering and Management Systems, 2003.

- Honors in Major Thesis Committees

1. Jesse Kelly, *GPU-Accelerated Simulation of Two-Phase Incompressible Fluid Flow using a Level-Set Method for Interface Capturing*, Dept. Mechanical, Materials, and Aerospace Engineering, UCF, 2009.

2. Christopher L. Kidwell, The Ambient Sound Engine: A tool Built for Improving Interactive and Improvisational Performance, School of EECS, UCF, 2009.

3. Steven Braeger, School of EECS, UCF, 2009.

L. Workshops Organized and Student Involvement

- Organized an I2Lab Forum, including a workshop of graduate and undergraduate research posters, with over 100 student poster presentations, and several keynote speakers from federal agencies and industry, 2006.
- Member of a committee that provided oversight to student activities and awards in the IEEE International Conference on Image Processing (ICIP), in 2007, and 2008.
- Engage every year my students in peer-reviews and organization of the conferences.

M. Independent Study Supervision

Number supervised at graduate level: 87 enrollments (at 3 credit hours each)
Number supervised at undergraduate level: 2 enrollments (at 1 credit hour each)

VI. Professional Services

A. International

- Editorial and Technical Committee Memberships:
  - Associate Editor – *IEEE Transactions on Image Processing* 2011 – 2016.
  - Organizing Committee member and Sponsorship Chair of ACM Multimedia Conference, 2014.
  - Associate Editor – *IEEE Transactions on Image Processing* 2003 – 2008.
  - Organizing Committee member and Local Chair of IEEE International Conference on Image Processing (ICIP), 2012.
  - Program Committee Member, ACIVS, 2008.
  - Member, technical committee for IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2004, 2005,2006, 2007, 2008, 2009, 2010, 2011, 2012, 2015, 2016, 2019.
  - Member, technical committee for International Conference on Computer Vision (ICCV), 2007, 2009, 2015.
  - Member, technical committee for IEEE International Conference on Image Processing, 2003, 2004, 2005,2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2017, 2018.
  - Member, technical committee for Asian Conference on Computer Vision (ACCV), 2007, 2008, 2009.
  - Member, technical committee for the European Signal Processing Conference (EUSIPCO), 2007, 2008, 2009.
  - Member, technical committee for European Conference on Computer Vision (ECCV), 2006, 2007, 2008.
  - Member, technical committee for International Conference on Advances on Pattern Recognition, 2005.
  - Member, technical committee for IEEE Int. Workshop on Image and Video Registration, 2004.
  - Member, committee for IEEE Workshop on Motion and Video Computing, 2002.
  - Member, committee for IEEE Workshop on Applications of Computer Vision, 2002.
  - Member, committee for IEEE Workshop on Stereo and Multi-baseline Vision, in conjunction with the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2001.
  - Guest committee, 34th Annual Conference on Information Sciences and Systems, 2000.

- Technical Paper Reviewer/Referee for the following Journals:

  (Multiple years of service: 1996 – present)

  – *IEEE Transactions on Pattern Analysis and Machine Intelligence*
  – *IEEE Transactions on Image Processing*
  – *IEEE Transactions on Systems, Man, and Cybernetics*
  – *IEEE Transactions on Circuits and Systems for Video Technology*
  – *Computer Vision and Image Understanding* (Ranked as #2 journal in Computer Vision)
  – *International Journal of Computer Vision* (Ranked also as the #2 journal in Computer Vision)
  – *Journal of Vision and Image Computing*
  – *Pattern Recognition*

- Technical Program Committee for the following Conferences (since 1996):

  – *IEEE Conference on Computer Vision and Pattern Recognition*
  – *IEEE International Conference on Computer Vision*
  – *IEEE International Conference on Image Processing*
  – *IEEE International Conference on Acoustics, Speech, and Signal Processing*
  – *IEEE Virtual Reality Conference*
  – *IAPR International Conference on Pattern Recognition*
  – *European Conference on Computer Vision*
  – *British Machine Vision Conference*

- Conference Technical Session Chair and/or Organizer:

  – Organizing Committee Member of the IEEE International Conference on Image Processing, held in Orlando, Florida, in 2012.
  – Area Chair, IEEE International Conference on Image Processing (ICIP), 2009.
  – Session Chair, IEEE Conference on Computer Vision and Pattern recognition (CVPR), 2008.
  – Area Chair, IEEE International Conference on Image Processing (ICIP), 2008.
  – Member organizing committee for IEEE Workshop on Motion and Video Computing, 2002.
  – Member organizing committee for IEEE Workshop on Applications of Computer Vision, 2002.

B. National and Regional

- Award Reviewer: National Science Foundation (NSF), since 2005.
- Member of IEEE Image, Video, and Multi-dimensional Signal Processing Technical Committee, 2012. This committee is the highest committee of the Signal Processing Society to discuss and establish policies and future plans for the society.
- Voting member of the IEEE Multimedia Communications Technical Committee (MMTC), since 2008
- Textbook Reviewer:
  - Prentice Hall Higher Education
  - McGraw-Hill Publishers: Higher Education Division
  - Elsevier

C. University Level

- Faculty Senate Strategic Planning Council, 2017-2021
- Member of Graduate Performance Assessment Committee (GPAC), 2010-2015
- Member of Undergraduate Performance Assessment Committee (UPAC), 2009-2010

D. College-Level

- *Member, College TIP Award Committee, 2022*
- *Member, College TIP Award Committee, 2021*
- *Member, College SoTL Committee, 2017*
- *Chair, Research Incentive Award Committee, 2015*
- *Member, College Graduate Programs Curriculum Committee (GPCC)*, 2010-2015
- *Member, College Assessment Committee*, 2008-2013
- *Member, College Computing Committee*, 2008-2010
- *I2Lab Steering Committee*, 2006-2007

E. Department Level

- *Member, Computer Science Promotion and Tenure Committee, 2021-present.*
- *Chair, Computer Science Promotion and Tenure Committee, 2020.*
- *Member of Graduate Committee, 2015-present*

- *Member of Executive Committee, 2010-present*
- *Member of Faculty Search Committee, 2017-2019*
- *Graduate Coordinator, Department of Computer Science, 2010-2015*
- *Chair, Computer Science Graduate Committee*, 2010-2015
- *Chair, Computer Science Curriculum Oversight and Review Committee*, 2009-2011
- *Member, Undergraduate Committee*, 2008-2010
- *Member of ad hoc IT study committee*, 2008
- *Academic Committee for Modeling and Simulation Program*, 2008-2010
- *Member, Undergraduate Committee*, Computer Science, UCF, 2007
- *Member, Faculty Search Committee*, Dept. of Computer Science, UCF, 2006
- *Chair, Undergraduate committee*, Dept. of Computer Science, UCF, 2003-2006
- *Member, Standards Committee*, Dept. of Computer Science, UCF, 2005
- *Faculty Search Committee*, Computer Science program, 2005
- *Member, Undergraduate Curriculum* Ad-hoc Committee, EECS, UCF, 2005
- *Member, faculty search committee*, Dept. of Computer Science, UCF, 2002-2003

F. Academic Program Leadership

- Together with Dr. Charles Hughes in CS initiated the idea of introducing Senior Design in the CS undergraduate program, wrote a joint proposal to the office of the Provost for funding it, presented the proposal to the department and CS Industrial Advisory Board for feedback. The proposal was finally implemented by a team in CS led by Dr. Mark Heinrich.
- As the Graduate Program Coordinator, I managed to stop the declining trend of 4% per year in the PhD headcount, which was happening for several years prior to 2010. Under my efforts as the CS Graduate Coordinator the program grew over 10% each year.
- As the Chair of the Undergraduate Committee organized a major effort to map the Computer Science curriculum to the IEEE/ACM Curriculum 2001 standard. This played a crucial role in the subsequent ABET accreditation of the program.

VII. Affiliations

- *Senior Member* of IEEE:
  - *Senior Member* of IEEE Computer Science Society
  - *Senior Member* of IEEE Signal Processing Society

VIII. Honors, Awards, and Professional Recognition

A. Teaching

- *Teaching Incentive Program (TIP) Award*: University of Central Florida, 2020.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- *Teaching Incentive Program (TIP) Award*: University of Central Florida, 2014.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- *Teaching Incentive Program (TIP) Award*: University of Central Florida, 2009.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- *Academic Excellence Award*, Sun Micro Systems, 2003-2005
  - Monetary Amount: $138,000 for laboratory enhancement

B. Research

- Excellence in Research Award, College of Engineering and Computer Science, 2021.
- Research Incentive Award (RIA): University of central Florida, 2020.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- Recipient of CAE Link Professorship, 2018.
- *Best Paper Award*: IEEE International Conference on Image Processing (ICIP), 2018.
- Recipient of UCF Inaugural Luminary Award, 2017.
- Recipient of the Dean's Advisory Board Award, 2017.
- Recipient of CECS Excellence in Research Award, 2016.
- Research Incentive Award (RIA): University of central Florida, 2014.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- UCF Millionaire's Club, since 2013.
- Excellence in Research Award, College of Engineering and Computer Science, 2014.
- Research Incentive Award (RIA): University of central Florida, 2009.
  - Monetary Amount: $5,000 permanent increase to 9-month salary
- *Best Scientific Paper Award*: International Conference on Pattern Recognition, ICPR-2008, International Association for Pattern Recognition (IAPR).

  Yuping Shen, Nazim Ashraf, and Hassan Foroosh, *Action Recognition based on Homography Constraints*, International Conference on Pattern Recognition (ICPR), 2008.

Conference acceptance rate for oral presentation less than 15%. Selected among ~1000 accepted papers in the conference as the best scientific contribution of the conference.

- *Distinguished Researcher*: UCF College of Engineering and Computer Science, 2005 – 2006, Assistant Professor level.
  - Monetary Amount: $2,500 one-time incentive.
- *Best Paper Honorable Mention*: IEEE International Conference On Image Processing, ICIP 2005,

  M. Balci, H. Foroosh, *Estimating Sub-Pixel Shifts Directly From Phase Difference*, Proceedings of IEEE Int. Conf. on Image Processing (ICIP), Honorable Mention, vol. 1, pages 1057-1060, 2005.

  Conference acceptance rate for oral presentation less than 20%. Selected among ~800 accepted papers in the conference.
- *Best Paper Honorable Mention*: International Conference on Acoustics, Speech, and Signal Processing, ICASSP 2005,

  M. Balci, H. Foroosh, *Inferring Motion from the Rank Constraint of the Phase Matrix*, Proceedings of IEEE International Conf. on Acoustic Speech & Signal Processing (ICASSP), Vol. II, pages 869-872, 2005.

  Conference acceptance rate for oral presentation less than 20%. Selected among ~900 accepted papers in the conference.
- *Distinguished Researcher*: UCF School of Electrical Engineering and Computer Science, 2004 – 2005,
  Assistant Professor level.
- *Piero Zamperoni Award*, International Association for Pattern Recognition (IAPR), 2004.
  - Note on the Plaque:

    "In Grateful Recognition of Contributions to the Field of Pattern Recognition"
- *Senior Member of IEEE*, 2000-present.
  - Note on the Plaque:

    "In Recognition of Professional Standing"

C. Other Recognitions or Scholarships

- *Summer Faculty Fellowship, Invited Professor*, University of Nice - Sophia Antipolis, 2009.
- *Fellowship of Academie de Nice* for doctoral research, 1993.
- *Fellowship of Fondation de France* for pre-doctoral research, 1992.

IX. Personal Information

A. Citizenship

United States of America

B. Interests

- Old Fashion hobby Electronics
  - Electronics has evolved incredibly. I find it fun to do some old fashion electronics using single components (resistors, capacitors, inductors, transistors, OpAmps, 555-timer, etc.), on old fashion printed circuit boards (PCB).
- Antique cameras and taking pictures with them
  - Millennials have little clue what an old fashion camera is (pinhole, film, din, exposure, negative, developing the negative, etc. - all unknown concepts to them).
- Biking
- Travelling