Curriculum Vitae

To teach, to seek, to serve, & to learn.

Sudeep Sarkar

Professor and Chair,
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October 13, 2017

1. Educational Background

- **Doctor of Philosophy (Electrical Engineering)**
  - The Ohio State University, Columbus, Ohio, March 1993.
  - Dissertation title: *On Computing Perceptual Organization in Computer Vision.*
  - Advisor: Prof. Kim L. Boyer.

- **Master of Science (Electrical Engineering)**
  - The Ohio State University, Columbus, Ohio, March 1990.
  - Thesis: *Optimal, Efficient Detection and Low Level Perceptual Organization of Edge Features.*
  - Advisor: Prof. Kim L. Boyer.

- **Bachelor of Technology (Electrical Engineering)**
  - Indian Institute of Technology, Kanpur, India, May 1988.
  - Project: *Modeling of flicker noise using autoregressive moving average (ARMA) models: Simulation and Hardware Validation.*
  - Project Advisor: Prof R. Sharan.

2. Honors

1. Fellow of the National Academy of Inventors (NAI), 2017.
2. Fellow of the American Institute for Medical and Biological Engineering (AIMBE), 2016.
3. Best Student Paper Award at IEEE International Conference on Identity, Security, and Behavior Analysis, 2015.
4. Best Scientific Paper Award at International Conference on Pattern Recognition, 2014.
5. Outstanding Faculty Award, University of South Florida, 2014.
6. Fellow of the American Association for the Advancement of Sciences (AAAS), 2013.
7. Fellow of the Institute for Electrical and Electronics Engineering (IEEE), 2013.
8. IEEE Computer Society Distinguished Visitor Program Speaker, 2010-2012.
9. Charter Member of National Academy of Inventors, 2010.
10. IBM Best Student Paper Award at International Conference on Pattern Recognition, 2010.
11. Fellow of the International Association of Pattern Recognition (IAPR), 2008.
12. Ashford Distinguished Scholar Award, University of South Florida, 2004.

13. Outstanding Undergraduate Teaching Award, University of South Florida, 1998.
14. Teaching Incentive Program Award, University of South Florida, 1996.
15. CAREER Award, National Science Foundation, 1995.
16. Ohio State University Presidential Fellowship for Doctoral Research, 1992.
17. Outstanding Graduate Research Award, National Council of Graduate Students, 1990.
18. Best Undergraduate Electrical Engineer, IIT-Kanpur, 1988.
19. Merit Certificate for academic excellence (sophomore and junior), IIT Kanpur, 1986, 1987.
20. National Talent Scholarship by the NCERT, India, 1984.

3. Work Experience

1. Department Chair, Computer Science and Engineering, University of South Florida, Tampa from 2017– current.
    a. Lead a team of 25 faculty members, 10 instructors, and 5 staff members to educate and inspire 797 undergraduate students and 226 graduate students.
    b. $1.8 million in research expenditures annually.
2. Associate Vice-President for I-Corps Programs, USF Research and Innovation, University of South Florida, Tampa, from 2017-current.
    a. Lead the National Science Foundation funded Innovation Corps (I-Corps) Site at USF to foster the transition of papers to products, i.e. the transfer of deep science and technology research ideas into the products and services to benefit society.
3. Professor in Computer Science and Engineering, University of South Florida, Tampa from 2004– current.
    a. Teach courses.
    b. Conduct externally and internally funded research and innovation.
    c. Advise PhD/MS/BS students.
4. Associate Vice-President for Research and Innovation, Office of Research and Innovation, University of South Florida, Tampa, from 2012-2016.
    a. Assist Senior Vice-President for Research & Innovation, who reports to the University System President.
    b. Conceptualized, piloted, and institutionalized the Faculty External Honors, Prizes, and Awards process and infrastructure. It involves cataloging (http://awards.research.usf.edu), tracking, and assisting faculty in seeking external awards and honors that bring prestige both to the faculty member and to the institution.
    c. Director of National Science Foundation funded Innovation Corps (I-Corps) Site at USF, 2015-2018.
    d. Co-Chaired, USF Research Strategic Planning Committee, 2014-2015.
    e. Managed a $500K annual Florida Center for Cybersecurity Seed Grant Program across twelve state universities.
    f. Instrumental in the signing of the MOU between USF Research Park and Tecnopuc, PUCRS, Porto Alegre, Brazil.
    g. Coordinate campus-wide inter-disciplinary projects (proposals & grants) and national level initiatives such as the National Academy of Inventors (NAI).

h. Member of system-wide committees on STEM Collaborative, Big-Data Curriculum, University Budget Re-engineering.

5. Research Administration Faculty Fellow, Office of Research and Innovation, University of South Florida, Tampa, 2009- 2012.

6. Associate Professor in Computer Science and Engineering, University of South Florida, Tampa from 1999 to 2004.

7. Assistant Professor in Computer Science and Engineering, University of South Florida, Tampa from 1993 to 1999

4. Professional Affiliations

1. NAI Fellow
2. AIMBE Fellow
3. IEEE Fellow
4. IAPR Fellow
5. AAAS Fellow
6. Member of IEEE Computer Society
7. Member of Sigma Xi: The Scientific Research Society

5. Post Doctoral Scholars

1. Mauricio Pamplona Segundo, "Deep Learning and Semantic Understanding," 04/2017-04/2018
2. Guillermo Camara Chavez, "Video understanding," 08/2015 - 08/2016.

6. Students Advised

- Current students:

1. Ravi Subramanian, Phd candidate,
2. Ernie Hansley, PhD candidate
3. Sathyanarayan Aaakur, PhD student

- Doctoral Students:

1. Fillipe Souza, Ph.D., "Semantic Description of Activities in Videos." 2017 (Siemens)
2. Ravi Panchumarthy, Ph.D., "Direct Solutions to Perceptual Organization Problems," 2015 (Intel Inc).
3. Ravi Kiran Krishnan, PhD., "Generalized Conditional Matching Algorithm for Ordered and Ordered Set," 2014 (Unifi Software).
4. Kester Duncan, PhD., "Scene-Dependent Human Intention Recognition for an Assistive Robotic System," 2014 (Digital Signal Corporation).
5. Aveek Brahmachari, PhD., "Basal Graphs Structures for Geometry Based Organization of Wide-Baseline Image Collections," 2012 (Samsung).
6. Saumya P. Amarasiri, PhD., (co-major advisor with Dr. Gunaratne), "Use of Innovative Computer Technology and Optical Texture Properties in the Analysis of Pavement Digital Images," 2011 (Geotechnical Engineer, Radise International).

7. Vasant Manohar, PhD., (co-major advisor with Dr. Goldgof), "Facial Skin Motion Properties from Video: Modeling and Applications," 2009 (Raytheon BBN Technologies).
8. Himanshu Vajaria, PhD., (co-major advisor with Dr. Kasturi), Dissertation, "Diarization, Localization and Indexing of Meeting Archives," 2008 (Photon-X).
9. Ruiduo Yang, Ph.D., Dissertation, "Dynamic programming with multiple candidates and its applications to sign language and hand gesture recognition," 2007 (Qualcomm.).
10. Sunita Nayak, Ph.D., Dissertation, "Representation and Learning in Recognition of Sign Language," 2007 (Photometria Inc.).
11. Pranab Mohanty, Ph.D. (co-major advisor with Dr. Kasturi), Dissertation, "Learning from Biometric Distances: Performance and Security Related Issues in Face Recognition Systems," 2007 (Aware Inc.).
12. Duminda Randeniya, Ph.D. (co-major advisor with Dr. Gunaratne), Dissertation, "Automatic Geo-Referencing by Integrating Camera Vision and Inertial Measurements," 2007 (Oak Ridge National Labs.).
13. Nivedita Das, Ph.D. (co-major advisor with Dr. Ashmawy), Dissertation: "Modeling Three-Dimensional Shape of Sand Grains Using Discrete Element Method," 2007, (GEI Consultants Inc.).
14. Yong Zhang, Ph.D. (co-major advisor with Dr. Goldgof) Dissertation: "Robust algorithms for property recovery in motion modeling, medical imaging and biometrics," 2005. (Associate Professor at Youngstown University).
15. Zongyi Liu, Ph.D., Dissertation: "Gait-based human recognition at a distance performance, covariate impact and solutions," Nov. 2004 (Amazon.com now at Google Inc.).
16. Padmanabhan Soundarajan, Ph.D., Dissertation: "Core issues in graph based perceptual organization: Spectral cut measures, Learning," April 2004 (Neilsen Media Research).
17. Isidro Robledo-Vega, Ph.D., Dissertation: "Motion models based on statistics of feature relations: Human Identification from Gait," Sept 2002 (Faculty at the Instituto Technologico de Chihuahua, Mexico).
18. Mark Powell, Ph.D., Dissertation: "Towards objective color from images," Nov 2000, (Jet Propulsion Labs, California) (USF Outstanding Dissertation Award).
19. Leonid Tsap, Ph.D. (co-major with Dr. Goldgof), Dissertation: "Physically-based modeling of non-rigid motion in biomechanics problems", Spr. 1999. (Lawrence Livermore National Labs, National Institutes of Health) (USF Outstanding Dissertation Award).

- Masters Students:

1. Owen Watson, MS Thesis: "Full 3D Reconstruction from Multiple RGB-D Cameras," Spring 2013.
2. Ravi Kiran Krishnan, MS Thesis: "Detecting Group Turns of Speaker Groups in Meeting Room Conversations using Audio-Video Change Scale Space," Summer 2010, (PhD at USF).
3. Kester Duncan, MS Thesis: "Relational Entropy-based Measure of Saliency," Summer 2010, (PhD program at USF).
4. Aveek Brahamachari, MS Thesis: "BLOGS: Balanced Local and Global Search for Non-degenerate Two-view Epipolar Geometry, Summer 2009, (PhD program at USF).
5. Brendan Klare, MS, Thesis: "Background Subtraction using Ensembles of Classifiers with an Extended Feature Set," Summer 2008.

6. Sunil Ravulapalli, MS, Thesis: "Association of Sound to Motion in Video using Perceptual Organization," Spring 2006.
7. Amit Khemlani, MS, Thesis: "Counting of mostly static people in indoor conditions," 2004.
8. Soumee Chaudhari, MS, Thesis: "Modeling distance functions induced by face recognition algorithms," Nov 2004.
9. Ayush Parashar, MS, Thesis: "Representation and Interpretation of Manual and Non-manuals Information for Automated American Sign Language Recognition," July 2003. (Oracle Corp.).
10. Laura Malave, MS, Thesis: "Silhouette based gait recognition: Research Resource and Limits," July 2003. (PhD student at USF).
11. Lakshmi Reguna, MS, Thesis: "An In-depth Analysis of Face Recognition Algorithms using Affine approximations," May 2003. (Cyberguard, Florida).
12. Barnabas Victor, MS, (co-major with Dr. Bowyer), Thesis: "Image-based ear biometrics," Sept 2002. (ISSICAD/Cambio networks).
13. Nikhil Kelshikar, MS, Thesis: "Issues in volume computation using Cyberware range scanner," Sept. 2001. (GRASP Lab., UPenn).
14. Li Zhou, MS (co-major with Dr. Goldgof), Thesis: "Computer aided image analysis of skin histology images," Nov 2000.
15. Yong Zhang, MS, (co-major with Dr. Goldgof), Thesis: "A physical model based motion recovery algorithm and its applications in computer vision and imaging," Nov 2000. (Completed PhD at USF).
16. Kishore Korimilli, MS, Thesis: "Motion segmentation based on perceptual organization of spatio-temporal volumes," Sept. 1999 (IBM).
17. Srikanth Chavali, MS, Thesis: "Encoding the parameter space behavior of vision algorithms using Parameter Dependence Networks," Aug 1998 (Nortel Networks, Texas).
18. Hariprasad Janardana, MS, Thesis: "Experiments with a new structural similarity measure for image databases," July 1998 (Data Base Technologies, Boca Raton).
19. Sriprakash Sainath, MS, Thesis: "Approximate algorithms for matching image structures captured using Random Parametric Structural Descriptions," May 1998. (Motorola, Chicago).
20. Vinod Kannan, MS, Thesis: "Delineation of scars and volume estimation using range data," April 1997 (Motorola, Chicago).
21. Sudhir Borra, MS, Thesis: "Quantitative performance evaluation of perceptual organization modules in the context of object recognition," July 1996 (Worldres, California).
22. Nina Saxena, MS, (co-major with Dr. Ranganathan) Thesis: "Mapping and parallel implementation of Bayesian Belief networks," Dec. 1995 (PhD - U Texas at Austin).
23. Barry Sheppard, MS, Project: "A fast technique for extracting motion parameters from motion blurred images," Sept. 1995 (Texas Instruments).

- <u>Undergraduate Students (REUs, Senior Projects etc.)</u>
  1. Daniel Sawyer, 2016, 2017
  2. Manal Benyamine, 2016.
  3. Jason Melancon, 2014.
  4. Thomas Dietert, 2014.

5. Juan Lujan, 2014.
6. Andrew Messier, 2009.
7. Jeremy White, 2008.
8. Michele McLean, 2006-2007.
9. Oluwabukola Akinbo, 2006 (graduate studies at USF).
10. Melinda Black, 2006.
11. Eric Adams, 2005-2006.
12. Adebola Osuntogun, (went for graduate studies at Georgia Tech.), 2003-2005.
13. Laura Malave (continued graduate studies at USF), 2001-2002.
14. Christine Bexley (went for graduate studies at Notre Dame Univ.), 2001-2002.
15. Christine Kranenbru, 2001-2002.
16. Kenny Radfar, 1997.
17. Mat Galvin, 1997.

7. Departmental, College, and University Services

1. Program Manager, Florida Center for Cybersecurity Seed Grant Program, 2014-curent.
2. Member, USF Tampa 2018-2023 Strategic Plan Committee, 2017-18.
3. Co-Chair, USF System Research Strategic Planning, 2015-2016.
4. Member, University Budget Re-Engineering Committee, 2013-2016.
5. Member, USF System STEM Collaborative, 2014-2016.
6. Member, USF System Big Data Analytics Curriculum Committee, 2014-2016.
7. Interim Graduate Program Director, 2009.
8. Chair, College of Engineering Faculty Governance Committee, 2010-2011.
9. Member, College of Engineering Faculty Governance Committee, 2008-2010.
10. Chair, Departmental Awards and Honors Committee, 2007-2015.
11. Chair/Co-chair of Departmental Faculty Hiring Committee, 2004-2005, 2008-2009.
12. Chair, Departmental Tenure and Promotion Committee, 2006.
13. Chair of the Departmental committee on Bioinformatics, 2000-2006.
14. Chair of the PhD/MS qualifying examination committee, 1998-1999.
15. Departmental Faculty Mentoring Committee, 2008-2011.
16. Departmental Faculty Evaluation Committee, 2007-2008, 2011-2012, 2013-2014.
17. Member, ABET Continuous Evaluation Committee, 2006-2009.
18. Member of graduate admissions committee, 1998-2009.
19. Member of 5yr/10yr planning committee, 1998-2000.
20. Member of the College Computer Committee, 1999-2000.

21. Served as a member of the undergraduate curriculum committee, 1998.
22. Medical imaging track advisor Biomedical program in the College of Engineering, 2000-2004.
23. Member of the University Sabbatical Committee, 2002-2004.
24. Member of the University Standing Committee on Research Misconduct, 1999-2004.

8. Professional and External Services

- Leadership Capacities

1. Chair for Conferences, IAPR TC4 – Technical Committee on Biometrics, 2017.
2. General Co-chair, IEEE Winter Conference on Application of Computer Vision (WACV), 2017.
3. Chair, Program Committee, Annual Conference of the National Academy of Inventors, 2016.
4. Board of Trustees, Southeastern Universities Research Association (SURA), 2013 – current.
5. Board of Directors, National Academy of Inventors, 2013-current.
6. Vice-president for Conferences, IEEE Biometrics Council, 2012-2014, 2014-2016.
7. Program Manager, Florida Center for Cybersecurity Seed Grant Program, 2014-.
8. Chair, IAPR Fellow Committee, 2014-2016.
9. Program Co-chair, IEEE Winter Conference on Application of Computer Vision (WACV), 2015.
10. General Co-chair, IEEE International Joint Conference on Biometrics (IJCB), 2014.
11. IAPR Publications and Publicity Committee, 2014-2016.
12. General Co-chair, IEEE Workshop on Applications of Computer Vision (WACV), 2013.
13. Associate Director, NASA Florida Space Grant Consortium, 2013-2014.
14. Program Co-chair, SIBGRAPI 2012: Conference on Graphics, Patterns and Images, 2012.
15. IEEE Computer Society Technical and Conference Activities Board (T&C Board) Executive Committee (ExCom) At-Large member (2011-2012).
16. Chair of IEEE-CS Technical Committee on Pattern Analysis and Machine Intelligence (PAMI-TC), 2010-2012.
17. Governing Board of the International Association of Pattern Recognition, 2010-2012.
18. Program Co-chair, IEEE Conference on Biometrics: Theory, Application, and Systems, 2010
19. Representative of the Systems, Man and Cybernetics Society to the IEEE Biometrics Council, 2008-2011.
20. Local Arrangements Co-chair, International Conference on Pattern Recognition, 2008.
21. IAPR Standing Committee on Education 2006-2010, 2011-2015
22. Co-chair of IEEE Workshop in Empirical Evaluation Methods in Computer Vision, 2005.
23. General co-chair of the NSF sponsored Second Workshop on Perceptual Organization in Computer Vision, Corfu, Sept. 1999.
24. General co-chair of the First IEEE Workshop on Perceptual Organization in Computer Vision, Santa Barbara, June 1998.
25. Local Arrangements Chair for IEEE Workshop on Applications of Computer Vision, 1996.

- Editorial

  1. Co-Editor in Chief for Pattern Recognition Letters, 2011--
  2. Associate Editor of
     a. IEEE Transactions of Pattern Analysis and Machine Intelligence, 1999-2003, 2011-present.
     b. IET Computer Vision, 2008—2012.
     c. Image and Vision Computing, 2008-2010.
     d. Editorial Board of the Pattern Recognition journal, 2006—2010.
     e. IEEE Transactions on Systems, Man, and Cybernetics: Part B, 2004—2010
     f. Pattern Recognition Journal, 1999-2006
     g. Pattern Analysis and Applications Journal, 1999-2001.
  3. Track Co-Chair for Computer Vision and Robot Vision, International Conference on Pattern Recognition (ICPR), 2016.
  4. Track Co-Chair for Pattern Recognition and Machine Learning, International Conference on Pattern Recognition (ICPR), 2014.
  5. Area Chair for
     a. British Machine Vision Conference (BMVC), 2015, 2016.
     b. IEEE Conference on Automated Face and Gesture Recognition, 2011, 2013, 2015.
     c. International Conference on Pattern Recognition (ICPR), 2010, 2012
     d. IEEE International Conference on Computer Vision, (ICCV), 2007.
     e. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2003, 2004, 2012, 2014
  6. Guest co-editor of
     a. Special Issue of Computer Vision and Image Understanding on Perceptual Organization in Computer Vision, Oct 1999.
     b. Special Issue of Pattern Recognition Letters on SIBGRAPI – Advances in Pattern Recognition and Computer Vision, March 2014.

- Advisory Committee

  1. 9th International Conference on Advances in Pattern Recognition (ICAPR 2017)

- Program Committees

  1. Irish Machine Vision and Image Processing Conference 2011, 2014, 2015, 2016, 2017.
  2. Annual Meeting of the National Academy of Inventors, 2013, 2014, 2015, 2016, 2017.
  3. Intl. Workshop on Understanding Human Activities through 3D Sensors 2016.
  4. International Workshop on Biometrics in The Wild (B-Wild), 2015.
  5. Intl. Workshop on Face and Facial Expression Recognition from Real World Videos, 2014.
  6. 3rd Asian Conference on Pattern Recognition, International Liaison Chair, 2015.

7. SIBGRAPI - Conference on Graphics, Patterns and Images, Brazil, 2011, 2013, 2014.
8. ICCV'13 Workshop on Computer Vision for Converging Perspectives, 2013.
9. 4th International Workshop on Image Mining: Theory and Applications (IMTA), 2013
10. IAPR Intl Workshop on Depth Image Analysis, 2012
11. IAPR Intl Workshops on Structural and Syntactic Pattern Recognition (S+SSPR) 2010, 2012.
12. IEEE Workshop on Gesture Recognition at CVPR, 2011, 2012.
13. IEEE International Joint Conference on Biometrics, 2011
14. IEEE Conference on Biometrics: Applications, Theory, and Systems, 2007, 2008, 2009, 2012.
15. IEEE International Conference on Computer Vision (ICCV), 2003, 2005, 2009.
16. IEEE Conf. on Computer Vision & Pattern Recognition (CVPR), 1997, 1998, 1999, 2000, 2001, 2008, 2009, 2010, 2011.
17. International Conference on Pattern Recognition (ICPR), 2002, 2004, 2006, 2008, 2010.
18. European Conference on Computer Vision, ECCV, 2008.
19. Intl. Conf. on Computer Analysis of Images and Patterns (CAIP), 2009, 2011, 2013, 2015, 2017.
20. IEEE Conference on Systems, Man, and Cybernetics, 2007, 2008.
21. International Symposium on Visual Computing, 2008.
22. Conference on Audio-and Video-based Biometric Person Authentication, 2005.
23. SPIE International Symposium on Defense and Security: Biometric Technology for Human Identification, 2004, 2005, 2006, 2007, 2008, 2009.
24. Workshop Energy Minimization Methods in Computer Vision &Pattern Recognition, 2005.
25. IEEE Workshop on Perceptual Organization in Computer Vision, 2001, 2004, 2006, 2008, 2010, 2012
26. Indian Conference on Computer Vision, Graphics, and Image Processing, 1998.
27. IEEE Workshop on Empirical Performance Evaluation, 1998, 2001.
28. IEEE Workshop on Biomedical Image Analysis, June 1998.
29. IEEE International Conference on Tools with Artificial Intelligence, 1997.
30. IEEE International Symposium on Computer Vision, Coral Gables, Florida, 1995.

9. Education Grants

- **Case Studies in Wiki-enhanced Social Scribing of Lectures,** USF's Center for 21st Century Teaching Excellence, IL-CG grant, $4000, 2009-2010.
- **Enhancing Undergraduate Computer Science Curriculum through Image Computations**, National Science Foundation, 1/1/00 to 12/31/02, amount $75,205. (Principal Investigator)(Co-PIs: D. Goldgof, K. W. Bowyer).

10. Education Related Publications/Tutorials

1. F. de Souza, **S. Sarkar**, A. Srivatsava, "Gentle Introduction to General Pattern Theory and its Application to Video Event Analysis, Tutorial at 28th Conference on Graphics, Patterns, and Images (SIBGRAPI), Salvador, Brazil, 2015
2. **S. Sarkar**, "Biometrics for Recognition at a Distance," Developed exclusively for IEEE eLearning Library, *IEEE Educational Activities*, 2010, ISBN: 978-1-4244-6203-2.
3. **S. Sarkar**, "Wiki-enhanced social scribing of lectures: A case study in an undergraduate course," *Frontiers in Education Conference*, 2009, (oral).
4. **S. Sarkar**, "Evaluation of Effectiveness of Incorporation of Computer Vision into Undergraduate Data Structures," *IEEE Workshop on Combined Research-Curriculum Development in Computer Vision*, Dec. 2001, (oral).

5. **S. Sarkar** and D. G. Goldgof, "Integrating Image Computation in Undergraduate Level Data Structures Education," Special Issue on Education in the *International Journal on Pattern Recognition and Artificial Intelligence*., vol. 12, no. 8, pp. 1071–1080, 1998.
6. **S. Sarkar** and D. G. Goldgof, "Integrating Undergraduate Level Data Structures Education and Image Computation," in *IEEE Computer Society Workshop on Undergraduate Education & Image Computation*, June 1997, (oral).

11. Courses Taught

1. Data Structures (EEL 4851), Fall 1993, Sum 1994, Fall 1994, Spr 1995, Fall 1995, Spr 1996, Fall 1996, Fall 1997, Fall 1998, Sum 1999, Fall 1999, Spr 2001, Spr 2004, Fall 2004, Fall 2005, Fall 2007, Fall2008, Spr 2009.
2. Introduction to Computational Geometry (CIS 4930), Fall 1996, Spr 1998, Spr 1999, Fall 2000, Fall 2002, Spr 2007, Spr 2008, Fall 2009, Fall 2011.
3. Graduate Computer Vision (CAP 6410), Spr 1994, Spr 1995, Spr 1997, Spr 1998, Spr 2001, Spr 2003, Spr 2004, Spr 2005, Spr 2006, Spr 2008.
4. Digital Image Processing (CAP 5400), Fall 1995, Fall 1999, Fall 2001
5. Ethical Issues (CIS 4250), Spr 1997, Fall 1997, Fall 1998, Spr 1999, Fall 2000.
6. Image-based Biometrics (CIS 6930), Spr 2002.
7. Probabilistic Inference, Modeling, and Estimation (CIS 6930), Fall 2006, Fall 2008, Spr 2011
8. Pattern Recognition, (CAP 6638), Fall 2003.
9. Unix C for Non-majors (CIS 6930), Spr 1994, Fall 1994.

12. Grants

Current

1. An Automated Pressure Ulcer Monitoring System to Improve Pressure Ulcer Healing Outcomes for Veterans with SCI, DoD/**Veterans Administration**, 2016-2019, (Goldgof, Sarkar, Yu), $177,248.
2. I-Corps: Semantic Video—From Video to Descriptions, **National Science Foundation**, 2016-2017, (Sarkar, Souza, Galvin), $50,000.
3. II-New: A Research Platform for Heterogeneous, Massively Parallel Computing, **National Science Foundation**, 2015-2018, (Tu, Ligatti, Sarkar, Ghosh, Pandit), $679,798.
4. I-Corps Sites: University of South Florida: Catalyzing Research Translation, **National Science Foundation**, 2015-2018, (Sanberg, Sarkar, McDevitt, Fountain), $300,000.
5. Collaborative Cybersecurity Research at State University System of Florida, **Florida Center for Cybersecurity**, 2015-2017, (Sarkar + PIs at 11 SUS Institutions) $1,500,000.
6. i6 Challenge Grant Tampa Bay FirstWave Venture Center EXPANSION, Office of Innovation and Entrepreneurship, Economic Development Administration, **U.S. Department of Commerce**, 2015-2018, (Olson at Tampa Bay WaVE, Sanberg, Sarkar), $1,000,000.
7. MRI: Acquisition of a CAREN Virtual Reality System for Collaborative Research in Assistive and Rehabilitation Technologies, **National Science Foundation**, 2012-2017, (Dubey, Sarkar,

Quillen, Diamond), $450,000.

Past

8. Ontology based Perceptual Organization of Audio-Video Events using Pattern Theory, **National Science Foundation**, 2012—2016, $ 497,491, (Sarkar at USF, Srivatsava at FSU).
9. Support for National Academy of Inventors Annual Meeting, the **Lemelson Foundation**, 2013—2016, (Sarkar) $75,000.
10. i6 Challenge Grant Tampa Bay FirstWave Venture Center, Office of Innovation and Entrepreneurship, Economic Development Administration, **U.S. Department of Commerce**, 2012-2015, (Olson, Tampa Bay WaVE, Sanberg, USF, Sarkar;), $1,000,000.
11. Joint Physiological and Behavioral Biometrics-Based Authentication from Mobile Device Dynamics, DARPA Active Authentication/AFRL/SRI, 2013-2014, $165,000 (Co-PI Labrador).
12. Support for 2nd Conference of the National Academy of Inventors, **Oak Ridge Associated Universities, ORAU**, 2012-2013, $2,000.
13. AWS in Education Research Grant, Gait Challenge on the Cloud, **Amazon.com**, 2011-2013, $7,500 (usage credits).
14. Inaugural Conference of the National Academy of Inventors, **USF Conference Support**, 2012-2012, $10,000
15. Inaugural Conference of the National Academy of Inventors, **Oak Ridge Associated Universities, ORAU**, 2011-2012, $4,000.
16. National Academy of Inventors Project, **NAI Inc**., 2011—2012, $43,500.
17. iSIMON: Sign Language Learning Monitor, **College of Engineering Interdisciplinary Scholarship**, $30,000, 2011-2012, (Co-PI: Barbara Loeding).
18. Energy Minimization Computing using Field Coupled Nanomagnets, **National Science Foundation**, 2008—2012, $250,000 (Co-PI: Sanjukta Bhanja).
19. **Case Studies in Wiki-enhanced Social Scribing of Lectures,** USF's Center for 21st Century Teaching Excellence, IL-CG grant, $4000, 2009-2010.
20. Avatar DNA using Biometrics and User Access Controls, **Raytheon**, 2008-2010, $90,000. (Co-PI: Jarred Ligatti)
21. Recognition of Sign Language Patterns, **Center for Pattern Recognition, University of South Florida**, 2007-2009, $140,000 (Co-PI: Barbara Loeding)
22. Investigation of Automated and Interactive Crack Measurements, **Florida Department of Transportation**, (Co-PI with Gunaratne), 2007-2008, $146,184.
23. Face Recognition Algorithm Modeling in FRGC, **Unisys Corporation and Intelligence Technology Innovation Center (ITIC) within the CIA**, 2006, $66,950, (PI)
24. Aided Navigation: Theory and Applications for Sensors and Architectures, **STTR, Air Force Office of Scientific Research**, 2006-2007, $30,000 (with Scientific Systems Company, Inc.)
25. ITR: Fundamental Issues in Automated American Sign Language Recognition, **National Science Foundation**, 2003-2007, amount $397,849. (Principal Investigator) (Co-PI: Loeding)
26. Collaborative Research: Three Dimensional Characterization and Modeling of Angular Materials, **National Science Foundation**, 2003-2006, amount $213,006. (Co-PI with Alaa

Ashmawy)

27. Biometrics Technology Study, **US Army and STS International**, Aug 2003 to May 2005, amount $800,000 (Co-PI with Kasturi)

28. Outdoor Biometrics for Video Surveillance, **National Science Foundation I/UCRC,** 2005, $70,000 (PI)(Co-PIs: Kasturi and Goldgof)

29. Collison Avoidance for UAVs, **National Science Foundation I/UCRC**, 2005, $70,000 (Co-PI) (PI: Kasturi, Co-PI Goldgof)

30. ITR/AP Collaborative Research: A simulation based computational approach using machine learning to study stochastic business games, **National Science Foundation**, 9/1/2001 to 8/31/2004, amount: $210,001. (Co-PI)(PI: Tapas Das).

31. Passive Counting of People, **Neilsen Media Research**, 2003-2004, amount $30,000, 2003-2004. (Principal Investigator)

32. Data Sets, Performance Metrics, and Baseline Algorithms for Human Identification at a Distance, **DARPA**, 2002-2004, amount $363,372. (Principal Investigator)

33. CISE Research Resources: A compute-intensive sensor-based environment for research in Computer Vision and Artificial Intelligence, **National Science Foundation**, 9/15/2001 to 8/31/2003, amount: $149,713 + $72,000 USF match. (Principal Investigator)(Co-PIs: D. B. Goldgof, L. O. Hall, E. Fink)

34. Automated Quantification of Melanoma, **US Army Advanced Detection Center, Moffit Cancer Center,** USF, 8/1/01 to 7/30/03, amount: $77,000. (Principal Investigator) (Co-PI: D Goldgof)

35. The Role of Learning in Perceptual Organization of Complex Images, **National Science Foundation**, 08/15/99 to 7/31/03, amount $225,663. (Principal Investigator)

36. Enhancing Undergraduate Computer Science Curriculum through Image Computations, **National Science Foundation**, 1/1/00 to 12/31/01, amount $75,205. (Principal Investigator)(Co-PIs: D Goldgof, K Bowyer).

37. Workshop on Perceptual Organization in Computer Vision: Assessing the State of Art and Charting New Directions, **National Science Foundation**, Sept 1999, amount: $30,000. (Co-chair with Kim Boyer.)

38. Transitional Year Biomedical Research Grant, **The Whitaker Foundation**, 05/01/99 to 04/30/00, amount: $69,952. (Principal Investigator)

39. Segmentation and Combination of Range Data using Color-Texture Information, **Sandia National Laboratories**, 8/1/98 to 8/30/99, amount $30,000. (Principal Investigator) (Co-PI: D Goldgof)

40. Research Instrumentation Award: Computer Server, **National Science Foundation**, 1/1/98 to 12/31/98, amount: $87,848. (Co-PI) (PI: K. Bowyer, Co-PI: D Goldgof)

41. Major Research Instrumentation Grant, **National Science Foundation**, 8/15/97 to 7/31/98, amount: $164,282. (Principal Investigator) (Co-PIs: D Goldgof, K Bowyer, L Piegl)

42. Biomedical Research Grant, **The Whitaker Foundation**, 04/01/96 to 03/30/99, amount: $198,289. (Principal Investigator)

43. Research Experience for Undergraduates, **National Science Foundation**, 07/01/96 to 06/30/98, amount: $10,000. (Principal Investigator)

44. Faculty Early CAREER Development Award, **National Science Foundation**, 07/01/95 to

06/30/98, amount: $144,933. (Principal Investigator)

45. RADIUS Phase II Seed Contract, **Martin Marietta Corporation**, 1/31/95 to 7/15/95, amount: $20,000. (Principal Investigator) (Co-PI: Dr. Kim Boyer, The Ohio State University).

46. Start up Equipment Grant, **College of Engineering, USF,** 08/30/93 to 08/29/94, amount: $14,000. (Principal Investigator).

47. Research and Creative Scholarship Grant Program, **College of Engineering**, USF, 01/94 to 12/94, amount: $7,390. (Principal Investigator).

13. Publications

>7953 citations, h-index: 40 (Google Scholar Citation Indices as of 10/10/2016)

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1. Fillipe D. M. de Souza, Sudeep Sarkar, Anuj Srivastava, Jingyong Su, "Spatially Coherent Interpretations of Videos Using Pattern Theory," *International Journal of Computer Vision* , vol. 121, no. 1, pp: 5—25, 2017.

2. Fillipe Dias Moreira de Souza; **S. Sarkar**; Anuj Srivastava; Jingyong Su, "Pattern Theory for Representation and Inference of Semantic Structures in Videos," *Pattern Recognition Letters*, Special Issue on Award Winning Papers at International Conference on Pattern Recognition, vol 72, no. 1, pp. 41—51, March 2016 (handled by EiC G. Sanniti di Baja).

3. S. Bhanja, D. Karunaratne, R. Panchumarthy, S. Rajaram, and **S. Sarkar**, "Non-Boolean computing with nanomagnets for computer vision applications," *Nature Nanotechnology*, Published online 26 October 2015.

4. R. Krishnan and **S. Sarkar**, "Conditional distance based matching for one-shot gesture recognition," *Pattern Recognition*, vol. 48, no. 4, pp. 1302—1314, April 2015.

5. P.R. Sanberg, J. Genshaft, J., and S. Sarkar, Indirect costs: The reimbursement gap, *Nature*, vol. 517, p. 438, Jan 2015.

6. M. Pamplona Segundoa, L. Silvaa, O. R. P. Bellon, and **S. Sarkar**, "Orthogonal projection images for 3D face detection," *Pattern Recognition Letters*, vol. 50, pp. 72-81, Dec. 2014 (handled by EiC G. Sanniti di Baja).

7. M. Shreve, T. Luguev, M. Pamplona, D. Goldgof, and **S. Sarkar**, "High-resolution 3D Surface Strain using 2D Camera and Low-resolution Depth Sensor," *Pattern Recognition Letters*, vol. 50, pp. 34-42, Dec. 2014 (handled by EiC G. Sanniti di Baja).

8. P. R. Sanberg, J. Genshaft, **S. Sarkar**, "Rewarding academic innovation," *Science*, vol. 346, no. 6212, pp. 928-929, Nov. 2014.

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10. P. R. Sanberg, M. Gharib, P. T. Harker, E. W. Kaler, R. B. Marchase, T. D. Sands, N. Arshadi, and **S. Sarkar**, "Changing the academic culture: Valuing patents and commercialization toward tenure and career advancement," *Proceedings of the National Academy of Sciences* (PNAS), vol. 111, no. 18, pp. 6542—6547, April 2014.

11. S. Rajaram, D. K. Karunaratne, **S. Sarkar**, and S. Bhanja, "Study of Dipolar Neighbor Interaction on Magnetization States of Nano-Magnetic Disks," *IEEE Transactions on Magnetics*, vol. 49, no. 7, July 2013.

12. R. Panchumarthy, D.K Karunaratne, **S. Sarkar**, and S. Bhanja, "Magnetic State Estimator to

Characterize the Magnetic States of Nano-Magnetic Disks," *IEEE Transactions on Magnetics*, vol. 49, no. 7, July 2013.

13. A. Brahmachari and **S. Sarkar**, "Hop-Diffusion Monte Carlo for Epipolar Geometry Estimation between Very Wide-Baseline Images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 35, no. 3, pp. 755-762, March 2013.

14. K. Duncan and **S. Sarkar**, "Saliency in Images and Video: A Brief Survey," *IET Computer Vision*, vol. 6, no. 6, pp. 514—523, 2012.

15. S. Nayak, K. Duncan, B. Loeding, and **S. Sarkar**, "Finding Recurrent Patterns from Continuous Sign Language Sentences for Automated Extraction of Signs," *Journal of Machine Learning Research*,, vol. 13, pp. 2589—2615, Sept. 2012.

16. S. Amarasiri, M. Gunaratne, and **S. Sarkar**, "Use of Digital Image Modeling for Evaluation of Concrete Pavement Macrotexture and Wear," *Journal of Transportation Engineering,* vol. 138, no. 5, pp. 589-602, May 2012.

17. A. Kumari, **S. Sarkar**, J. F. Pulecio, D. K. Karunaratne, and S. Bhanja, "Study of magnetization state transition in closely spaced nanomagnet two-dimensional array for computation," Journal of Applied Physics, vol. 109, no. 7, http://dx.doi.org/10.1063/1.3536795, 2011.

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20. S. Amarasiri, M. Gunaratne, S. Sarkar, "Modeling of Crack Depths in Digital Images of Concrete Pavements Using Optical Reflection Properties," *Journal of Transportation Engineering*, vol. 136, no. 6, pp. 489-499, June 2010.

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28. S. K. Ghosh, J. W. Burdick, A. Bhattacharya, S. Sarkar, "On-line Algorithms for Exploring Unknown Polygonal Environments with Discrete Visibility," *IEEE Robotics and Automation Magazine*, *Special Issue on Computational Geometry in Path Planning*, vol.15, no.2, pp.67-76, June 2008.

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161. S. Sarkar and R. Panchumarthy, "Cloud computing architecture for scaling biometrics research for big data," *NSFCloud Workshop on Experimental Support for Cloud Computing*, National Science Foundation, 2014.

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Book Chapters

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203. K. L. Boyer, S. V. Raman, and S. Sarkar, "Generating structure hypotheses in cerebral magnetic resonance images using segment based focusing and graph theoretic cycle enumeration," in *Advances in Image Analysis* (Y. Mahdavieh and R. C. Gongalez), SPIE Optical Engg. Press, 1992.

Abstracts, Refereed Papers and Presentations

204. F. de Souza, S. Sarkar, A. Srivastava, and J. Su, "Video Event Understanding using Pattern Theory," Workshop on Computational and Mathematical Models in Vision (MODVIS), May, 2015.

205. R. Panchumarthy, D. Karunaratne, S. Sarkar, S. Bhanja, "Image Processing Tool to Characterize the Magnetic States of Nano-Magnetic Disks," 12th Joint Magnetism and Magnetic Materials/InterMag Conference, Jan 2013.

206. S. Rajaram, D. Karunatne, S. Sarkjar, S. Bhanja, "Effect of Neighbor Interaction among Nano-Magnetic Disks," 12th Joint Magnetism and Magnetic Materials/InterMag Conference, Jan 2013.

207. R. Krishnan, F. Souza, K. Duncan, S. Sarkar, B. Loeding, "Sign Language Tutor," *Inaugural Conference of the National Academy of Inventors*, Feb 2012.

208. A. Kumari, S. Bhanja, and S. Sarkar, "Study of Magnetization State Transition in Coupled Nanomagnet for Computation," *55th Magnetism and Magnetic Materials Conference*, Nov. 2010.

209. Z. Liu and S. Sarkar, "Outdoor biometrics over time by Fusing gait with face," *The Biometric Consortium Conference: Biometrics Research Symposium*, Sept. 2004.

210. Z. Liu, L. Malave, A. Osuntugun, P. Sudhakar, and S. Sarkar, "Towards Understanding the Limits of Gait Recognition," *SPIE Defense and Security Symposium on Biometric Technology for Human Identification*, April 2004.

211. J. Byrne, A. Gandhe, R. Prasanth, B. Ravichandran, M. Huff, R. Mehra, S. Sarkar, S. K. Mitter, S. Casadei, "A k-partition, Graph Theoretic Approach to Perceptual Organization," *IEEE Conference*

on Integration of Knowledge Intensive Multi Agent Systems (KIMAS), pp. 336-342, Oct. 2003.

212. S. Sarkar, "An introduction to perceptual organization," *IEEE Conference on Integration of Knowledge Intensive Multi-Agent Systems*, pp. 330–335, Oct. 2003.

213. J. Byrne, *et al.* and S. Sarkar, "A k-partition, graph theoretic approach to perceptual organization," *IEEE Conference on Integration of Knowledge Intensive Multi-Agent Systems*, pp. 336–342, Oct. 2003.

214. L. Zhou, S. Sarkar, D. Goldgof, D. Hilbelink, K. Muffly, "Computer Aided Image Analysis on Human Skin Histology Images," in *FASEB:Experimental Biology*, C225A, Orlando, Florida, April 2001 (abstract).

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216. M. W. Powell, S. Sarkar, D. B. Goldgof, P. Powers, and W. C. Cruse, "Progress in color-texture assessment of burn scars," in *Annual Regional Burn Seminar, Southern Medical Association*, Dec 1998.

217. S. Sarkar, L. Tsap, D. B. Goldgof, and P. Powers, "Progress in scar assessment," in *Tenth Annual Regional Burn Seminar,* Southern Medical Association, Dec 1997.

218. S. Sarkar, P. Powers, K. Bowyer, "Facial Scar Assessment," in *Eighth Annual Regional Burn Seminar*, Southern Medical Association, Nov 1995.

14. Other Invited Presentations and Talks

1. Keynote Speaker, Joint IAPR International Workshops on Structural and Syntactic Pattern Recognition (SSPR 2016) and Statistical Techniques in Pattern Recognition (SPR 2016), Merida, Mexico.
2. Plenary Speaker, International conference on Intelligent Human Computer Interaction (IHCI), Pilani, India, 2016.
3. Invited Seminar, Computer Science Department, National Institute of Technology, Durgapur, India, 2016.
4. Talk at Computer Science Department, Pontifica Universidade Catolica do Rio Grande Do Sul (PUCRS), Brazil, Sept. 2015.
5. Invited Speaker at the Biometrics, Identity & Security (BIdS) Research Showcase, Biometrics Consortium Conference, Florida, Sept. 2013.
6. Invited Speaker at the Centre for Interdisciplinary Mathematics in Uppsala University, Sweden, May 2013.
7. Invited Speaker at the Panel on The Research University as Economic Development Agency, Senior Leadership Institute, Orlando, Florida, Sept. 2012.
8. Invited Speaker at IEEE Workshop on Gesture Recognition, Denver, CO, June 2011.
9. Invited Speaker at SIBGRAPI: Conference on Graphics, Patterns and Images, August 2010.
10. Invited Talk, Electrical Engineering, Old Dominion University, November 2010.

11. Invited Talk, Computer Science and Engineering, University of South Carolina, April 2010.
12. IEEE-CS Distinguished Speaker Talk, University of Louisville, Kentucky, March 2010.
13. IEEE-CS Distinguished Speaker Talk, IEEE Rochester NY Section's Joint Chapters Meeting, March 2010.
14. IEEE-CS Distinguished Speaker Talk, Rochester Institute of Technology, March 2010
15. Invited Speaker Talk, Kodak Research Labs, Rochester, March 2010
16. Keynote Speaker at Mohawk Valley Technology Symposium at the State University of New York Institute of Technology, March 2010.
17. "Inverse Biometrics: From Scores to Templates," Invited Talk at IEEE International Conference on Biometrics, Identity & Security (BIdS), Biometrics Consortium Conference and Technology Expo, Tampa, 2009.
18. Invited talk at the Dr. Homi J. Bhabha Birth Centenary Workshop on Introduction to Graph and Geometric Algorithms, Indian Institute of Science, Bangalore, 2009.
19. Workshop on Challenges and Opportunities in Image Understanding, US Army, Washington DC, Jan 2007, (Invited speaker and participant).
20. Keynote speaker at the IEEE Workshop on Vision for Human Computer Interface (V4HCI) NYC, June 2006.
21. Talk on Human at a Distance at the Advanced Concept Technology Demonstration (ACTD) Candidate: Biometric Identification Targeting Exploitation (BITE), 2005.
22. Tutorial on Video Surveillance at the Annual Meeting of the Center on Search, Security and Rescue (SSR-RC), 2005.
23. Florida State University, 2005.
24. Workshop on Early Cognitive Vision, Isle of Skye, Scotland, May 2004 (Keynote lecture).
25. International Conference on Integration of Knowledge Intensive Multi-Agent System, 2003 (KIMAS'03), Oct 2003.
26. Central Mining Engineering Research Institute (CMERI), Durgapur, Aug 2003.
27. University of Delaware, Oct. 2002.
28. University of Florida, Dec. 2000.
29. Tata Institute of Fundamental Research, Mumbai, India, Jan., and April 2000.
30. Aeronautical Development Establishment, Bangalore, India, March 2000.
31. Michigan State University, US, May 1998.
32. NEC Research Institute, Princeton, US, Nov. 1997.
33. Indian Statistical Institute, Calcutta, India, Dec. 1997.
34. Center for Artificial Intelligence and Robotics, Bangalore, India, June 1995.

15. Patents

1. S. Bhanja, S. Sarkar, R. Panchmarthy, and D. K. Karunaratne, "Programmable Magnetic Energy Minimizing Co-Processor (MEMCOP), United States Patent 9,720,599, on August 1, 2017.
2. R. Panchumarty, D. K. Karunaratne, S. Sarkar, and S. Bhanja, "System and Method for Estimating the Magnetization States of a Nanomagnet Array," United States Patent 9,286,687 on March 15, 2016.
3. S. Sarkar, R. Subramanian, and M. Labrador, "Method to Compensate for Change in Device Orientation While Comparing Sensor Data," United States Provisional Patent Application 62/082,769, Filed November 21, 2014, United States Patent Application No.: 14/944,701; Filing Date: November 18, 2015.
4. Ayush Parashar, RaviKiran Krishnan, Sudeep Sarkar, "Automatic Parsing of Semi-structured Data and Identification of Missing Delimiters," United States Provisional Patent Application 62/165,925, Filed on 23 May, 2015.
5. P. Mohanty, S. Sarkar, R. Kasturi, P. Jonathon Phillips, "Indexing Face Templates Using Linear Models," United States Patent 8,331,632, 2012.
6. P. Mohanty, S. Sarkar, R. Kasturi, "Reconstruction of Biometric Image Templates Using Match Scores," United States Patent 8,165,352, 2012.
7. L. V. Tsap, D. B. Goldgof, and S. Sarkar, "Computer Vision-Based Technique for Objective Assessment of Material Properties in Non-Rigid Objects," United States patent 6,594,381, 2003.

16. Personal: US Citizen, Married, 2 Children.