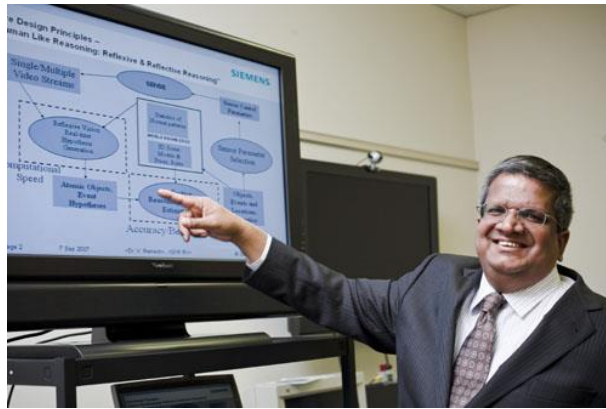.

CURRICULUM VITAE

Prof. DR.
VISVANATHAN RAMESH

**Professor of Software Engineering
(Bio-Inspired Vision Systems)
Johann-Wolfgang Goethe Universität**

Email: visvanathan_ramesh@hotmail.com
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Phone: +49-(0)160 96419933

WORK EXPERIENCE

Johann Wolfgang Goethe Universität,   July 2011 - Present

W3 Professor
Software Engineering (Biologically Inspired Vision Systems) (Tenured)
Johann Wolfgang Goethe University, Frankfurt am Main

- Research & teaching in the field of systems science and engineering for vision. Research focus is on design theory and automation tools for AI system designs. Teaching focus on Systems Thinking: Systems and Software Engineering for AI, Machine Learning, Computer Vision and Pattern Recognition.

Adjunct Fellow
Frankfurt Institute for Advanced Studies (FIAS), Frankfurt am Main   July 2011 - 2018

Coordinator of Bernstein Focus NeuroTechnology – Frankfurt   July 2011 - Nov 2016
Johann Wolfgang Goethe University, and FIAS Frankfurt am Main

- Streamlined and refocused a multi-million Euro research program in vision involving an interdisciplinary research team in cognitive science, neuroscience, psychology, machine learning and computer science & engineering.
- Coordination of science & engineering efforts leading to next generation cognitive vision platform.
- Research in architectures, engineering, simulation tools, application demonstrators that fuse neuroscience and systems engineering principles.
- Establishment and integration of Industry collaborations for seamless transfer of scientific and technology results.

Siemens Corporate Research Inc., Princeton USA Jan 1995-June 2011
(a division of Siemens Corporation)

Cross Global Technology Field Initiative Lead in "Cognitive Systems" Oct 2010 –June 2011

- Develop embryonic collaborative program that links various Information and Automation Technology Fields to develop engineering methodologies, architectural designs, and implementations of next generation „Cognitive Systems".
- Technology portfolio spans a spectrum of intelligent systems and platforms for multi-modal cognitive systems that span audio, video, 3D vision, signal processing and HMI technologies with applications in Industry, Energy and Healthcare sectors.
- Direct a cross-disciplinary team of researchers from various global technology fields including: Image Analytics and Informatics, Imaging and Visualization, Intelligent Systems and Control, Knowledge and Decision Systems and Automation systems.

Global Technology Field Leader   May 2009 – Sep 2010
Real-time Vision & Industrial Imaging Technologies

- Serve as the global technology lead for a 8M$ R&D program in the area of computer vision, imaging, audio and wireless signal processing, and multimedia systems with 65% percent of the funding from operating companies and 5% from the US and EU governments.
- Responsible for long-term global R&D strategy in vision and industrial imaging for Siemens corporate technology.
- In charge of project acquisitions, customer interactions, defining and implementing a technical vision, long-term strategic R&D planning, IP creation, academic cooperation, technical leadership.
- Directing an international team (in Princeton, NJ, Munich, Graz, Bangalore) to deliver high-end technical solutions and services.
- Technology portfolio spans a spectrum of intelligent systems and platforms for audio, video, 3D vision, 3D geometric modeling and visualization, and HMI technologies with applications in Industry, Energy and Healthcare sectors.

- Mentored key individuals who went on to positions such as department head and professors in major universities.

Department Head   **May 2002 – Dec 2009**
Real-time Vision & Modeling Department

- Built the real-time vision R&D department from scratch with a customer portfolio that spans industrial and medical domains with an average R&D budget of 6M$.
- Established strategic relationships with Siemens business units (Building & Security, Automotive, Transportation, Energy and Automation).
- Specific products and solution examples: Intelligent Video analysis for Transportation and Security, Multi-camera vision & control system for parcel sorting and logistics, Pattern finding for Machine Vision, Visualization systems for Global Inspection, Infrared Online monitoring of Turbines for Preventive maintenance, Adaptive Driver assistance systems including traffic sign recognition, vision for automatic cruise control.
- Participated in business development and sales activities when requested by Siemens customer. End customer interactions with security authorities of airports, ports, subway, highway authorities, and large commercial entities.
- Spun out a separate department to address data analysis for medical domain in 2004.
- Was instrumental in setting up Siemens Corporate Technology India research lab, including examination of options for sites, university scouting, and assistance in early phase hiring of key R&D personnel in 2005.
- Experienced in integration and harmonization of portfolio of diverse programs into a single cohesive unit: Acoustics & signal processing (2005), Multimedia communication (2006), Geometric modeling (2008), Smart Video (2009).
- Mentored key individuals who went on to leading positions such as department head and professors in major universities.

Project Manager   **July 1997 – May 2002**
Imaging & Visualization Department

- Defined the long-term research directions for the video analysis program, re-organized the entire makeup of the team, established strategic university research links, and hired the right talent, to support key innovations in real-time video analysis systems applicable to multiple Siemens businesses.
- Mentored Ph.D students in strategic areas to define intelligent video analysis program IP landscape.
- Fundamental innovations led to a "best paper" award, several key patents, and high-performance real-world video surveillance systems.
- Best paper award: "Real Time Tracking of Non-Rigid Objects Using Mean Shift", Processing of the IEEE International. Conference on Computer Vision & Pattern Recognition, CVPR 2000; Vol.2, pp.142-149.
- Developed comprehensive IP portfolio for safety, security and transportation that enabled the creation of a department and new business opportunities for industrial Siemens divisions.

Member of Technical Staff   **Jan 1995 – June 1997**
Imaging & Visualization Department

- Responsible for basic research in image and video analysis as well as medical imaging.
- Applications include: sport video analysis, face recognition, video-based people counting, and angiographic image analysis.

Larsen & Toubro Private Limited, Mumbai, India   July 1984 - Dec 1984

Graduate Engineer Trainee

- Trained in a rotational program transitioning across various departments in the company to attain exposure to company departments (e.g. quality control, marketing, R&D).

ACADEMIC EXPERIENCE

TEACHING

Professor   **2011 – Present**
Johann Wolfgang Goethe University Frankfurt
FB12 - Department of Computer Science and Mathematics

- Systems Engineering meets Life Sciences I & II
- Systems and Software Engineering I & II
- Machine Learning I & II
- Seminar on Pattern Analysis and Machine Intelligence
- Practice in Pattern Analysis and Machine Intelligence

Instructor   **Winter 2003**
Department of Electrical Engineering & Computer Science
Lehigh University, Bethlehem, PA

- Probabilistic methods in Computer Vision

Instructor   **Spring 1994**
Department of Electrical Engineering
University of Washington, Seattle, WA

- Seminar on the Image Understanding Environment (IUE).

Instructor (Part-time)   **Fall 1993**
Department of EE & Software Engineering
Seattle University, Seattle WA

- Supervised undergraduate senior software engineering projects.

Graduate Teaching Assistant   **Fall 1987**
Department of EE
University of Washington, Seattle, WA

- Taught "Introduction to Data Structures".

Graduate Teaching Assistant   **Winter 1985, Fall 1986, Spring 1987**
Department of ECE
Virginia Tech, Blacksburg, Virginia

- Taught: Microprocessor System Design, Introduction to Microcomputers, Introduction to Electric Power Systems.

SUPERVISED PHD AND MASTER STUDENTS

- SUBBU VEERASAVARAPPU: Goethe University, Phd. Topic: "Simulation for Cognitive Vision" (completed – October 2019).

Current PHD Students:

- TOBIAS WEIS: Goethe University, Phd. Topic: "Memory Representations for Cognitive Vision".

- RUDRA HOTA: Goethe University, Phd. Topic: "Hypotheses Generators for Cognitive Vision".

- MARTIN MUNDT: Goethe University, Phd. Topic: "Continuous Learning for Cognitive Vision".

- JULIA PLIUSHCH: Goethe University, Phd. Topic: "Modularity in Cognitive Vision".

Past PHD Students (as primary Industrial advisor)
- JAN ERNST: University of Erlangen (2013), Phd. Topic: "The Trace Model for Spatial Invariance with Applications to Structured Pattern Recognition, Image Patch Matching and Incremental Visual Tracking".
- TONY HAN: University of Illinois and Urbana-Champaign (2007), Phd. Topic: "Watching Humans and their Activities".
- BINGLONG XIE: Lehigh University (2006), Phd. Topic: "Statistical Methods for Face Detection and Recognition".
- WEI-LIANG LI: Lehigh University (2005), Phd. Topic: "Performance Characterization of Boosting in Computer Vision".
- YANGHAI TSIN: Carnegie Mellon University (2003), Phd. Topic: "Kernel Correlation as an Affinity Measure in Point-Sampled Vision Problems".
- XIANG GAO: Lehigh University (2003), Phd. Topic: "Statistical Modeling and Performance Characterization of Low Level Vision Algorithms".
- MICHAEL GREIFFENHAGEN: University of Erlangen (2002), Phd. Topic: "Statistical Modeling and Performance Characterization of a Real-time Dual Camera Surveillance".
- ZHAO-HUI SUN: University of Rochester (2001), Phd. Topic: "Object-Based Video Processing with Depth"

PHD Students (committee – secondary advisor/evaluator)
- ARMIN HOENEN: Goethe Universität (2017), Phd. Topic: "Tools, Evaluation and Pre-Processing for Stemmatology".
- KISHORE KONDA: Goethe Universität (2015), Phd. Topic: "Unsupervised Relational Feature Learning for Vision".
- PRAMOD CHANDRASHEKARIAH: Goethe Universität (2015), Phd. Topic: ``Curious vision system for autonomous object learning''
- LUCA LONINI: Goethe Universität (2013), Phd. Topic: "Autonomous Learning of Active Binocular Vision on a Humanoid Robot".
- THOMAS WEISSWANGE: Goethe Universität (2011), Phd. Topic: "Development of Cue Integration with Reward-mediated Learning".

Master's and Bachelor Thesis (Primary advisor)
- NICOLAS NONNENGIESSER, Goethe Universität (2019), Topic: Performance Evaluation of Machine Learning for Automotive Safety".
- CHRISTIAN BUCHTA, Goethe Universität (2019), Topic: A Vital Sign Monitoring Systems for Automotive Applications".
- CHRISTIAN ANDREAS MUELLER, Goethe Universität (2019), Topic: Web-based Machine Learning Platform, and a case study in Financial data analysis".
- HENDRIK WEICHULA: Goethe Universität (2018), Topic: "Evaluation of Machine Learning Services".
- ANDRES RODRIGUEZ: Goethe Universität (2017), Topic: "Music Classification using Machine Learning".
- SILVIA WALK: Goethe Universität (2017), Topic: "Statistical Characterization of Program Behavior".
- LISA HORNUNG: Goethe Universität (2017), Topic: "Deep Learning for Brake-light Detection".
- ANNA-LENA FINK: Goethe Universität (2016), Topic: "Natural Language Processing for Model based System Design".
- TIMM HESS: Goethe Universität (2016), Topic: "Simulation for Deep Learning (RoboSoccer)".
- SINA DITZEL: Goethe Universität (2016), Topic: "Robot-Localization using Particle Filters".
- MARIUSZ MAZUREK: Goethe Universität (2015), Topic: "Symmetry in Computer Vision".
- ALI SHAHID: Goethe Universität (2015), Topic: "3D Motion Data Fusion: IR-SCT, Nexonar Ultrasound".
- ALEXANDER HEUN: Goethe Universität (2015), Topic: "Object Recognition in the Automotive

Domain''.

- RICHARD ADAMCA: Goethe Universität (2014), Topic: "Video Pre-Processing for Layer Separation".
- PATTREEYA TANISARO: Goethe Universität (2012), Topic: "Extraction of structural components and patterns from relational representation of road scenes".
- KATJA SAKIEWICZ: Technical University of Hamburg-Harburg (1998), Topic: "Action Recognition from Tennis Video".
- BJOERN STENGER: University of Bonn (2001), Topic: "Topology-Free Hidden Markov Models with Applications in Video Surveillance".
- CLAUDIA SCHLOSSER: University of Passau (2005), Topic: "Performance Characterization of Mean-Shift".

Master's and Bachelor Thesis (committee – second Evaluator)
- ADIL LASHAB: Goethe Universität (2018), Topic: "Objekterkennung mit Unterstützung einer platformunabhängigen Software-Schicht".
- PHILIP HUELSDUNK: Goethe Universität (2017), Topic: "Registration of Neural Data".
- MARTIN MUNDT: Goethe Universität (2015), Topic: "Temporal Coding in Deep Convolutional Neural Networks".
- ALTUG TEKIN: Goethe Universität (2015), Topic: "Implementation eines RST-Tools für Text-Bild-Aggregate".
- KATARZYNA SADOWZKA: Goethe Universität (2015), Topic: "Usage of Skip N-Grams for Duplicates Detection".
- HESAMEDIN GHAVANI KAZZAZI: Goethe Universität (2015), Topic: "Gesture Modeling for WikiNect".
- ZAHURUL ISLAM: Goethe Universität (2015), Topic: "Multilingual Text Classification using Information-Theoretic Features".
- SERGEJ JASCHOKOW: Goethe Universität (2014), Topic: "Automated Information Extraction for Algorithmic Trading Systems: Detection and Diffusion of Topics and Events in Financial News".

INVITED TALKS & PANEL DISCUSSIONS

- AI ReVolution & its Impact on Education, Data Science Meetup, Frankfurt School of Finance and Management, Frankfurt am Main, November 2018.
- AI ReVolution, Continental AG, Safety & Chassis Division, December 2017
- Computer Vision Roundtable, Continental AG, ADAS division, Lindau, July 2017.
- NETT Workshop on Neural Engineering in Medicine and Related Fields, Nancy, France, July 2016.
- British Machine Vision Association Technical Meeting, Quantitative Image Analysis for Astronomical Applications, October 2013.
- International Workshop on Brain-inspired Computing, Computational models, algorithms, applications, and implementations, Cetraro, July 2013.
- HPI Colloquium, Systems Engineering for Visual Cognition, February 2013, Hasso-Plattner Institute, Potsdam, Germany.
- Computer Science Department, University of Birmingham, November 2012.
- International Institute of Information Technology, Hyderabad, July 2012.
- Workshop on "The Role of Abstraction and Hierarchical Structures in Cognitive Systems", TU Munich, Institute for Advanced Studies, July 2012
- NSF Workshop on Frontiers in Computer Vision, MIT, Cambridge, Massachusetts, August 2011.
- Visual Cognition, Semantic & Quantitative Imaging, Industry Session on Computer Vision, European Conference on Computer Vision, September 2010.
- Various Presentations on Performance Characterization and Statistical Methods in Computer Vision, Real-time Vision Systems & Applications (2001 – 2011). (Rutgers University, University of Maryland, Carnegie Mellon University, Princeton University, Rensselaer Polytechnic University, UCLA, ETH-Zurich, IIT Mumbai, IIT Kanpur, etc.).
- Robust Video Understanding Systems: State of the Art and Future Challenges, NSF Workshop on Distributed Video Sensor Networks, May 2009.

- Industry Session on Video Surveillance: IEEE AVSS Conference, Santa Fe, New Mexico, September 2008.
- Panel member: Future Directions in Computer Vision, IEEE CVPR Conference, Anchorage, June 2008.
- Panel Member: Multimedia Content Analysis and Semantic Adaptation, WIAMIS, Klagenfurt, Austria, May 2008.
- Real-time Vision for Transit Operations and Security, IEEE Vehicular Technology Society, New York Chapter, April 2005.
- Engineering Methodologies for Real-time Vision Systems, CMU Robotics Institute Seminar, November 2004.
- Invited talk, ENAR special session on Biometrics, Spring 2004.
- Panel member, ACM Multimedia workshop on video surveillance. 2003.
- Real-time Vision Technologies – Trends and Applications, Princeton ACM Forum, February 2003.
- Real-time Vision at Siemens Corporate Research, Princeton University, April 2002.
- Real-time Vision at Siemens Corporate Research, UCF, May 2002.
- Real-time Vision at Siemens Corporate Research, Stevens Institute of Technology November 2002.
- Real-time Vision at Siemens Corporate Research, CMU RI Seminar, November 2001.
- Performance Analysis of Video analysis Systems, Invited presentation, IEEE Workshop on Performance Evaluation of Tracking Systems, 2001.
- Performance Analysis of Video analysis Systems, Invited presentation, IEEE Workshop on Performance Evaluation of Tracking Systems, 2000.
- "Industrial Perspectives on Performance Evaluation of Medical Imaging Algorithms", Panel Discussion on Performance Evaluation in Medical Imaging, SPIE Medical Imaging 2000, San Diego, February 2000.
- Panel Member, Industrial Perspective on Workshop on Undergraduate Education in Computer Vision, at IEEE CVPR Conference, 2000.
- Real-time Video Analysis systems: Statistical Characterization and Applications, European workshop on Mathematics and Statistics in Computer Vision and Speech Processing, Crete, July 1999.
- Performance Characterization in Computer Vision: Relationship to Machine Learning, International Workshop on Learning in Computer Vision, Freiburg, Germany, June 1998.
- Performance Characterization in the context of Video Analysis, Dagstuhl Workshop on Evaluation and Validation of Computer Vision Techniques, Germany, March 1998.
- Performance Characterization of Image Understanding algorithms, Department of Informatics, University of Erlangen, Germany, November 1997.
- Performance Characterization of Image Understanding algorithms, Department of Electrical Engineering, State University of New York at Buffalo, November 1997.
- Performance Characterization of Image Understanding Algorithms, Department of Computer Science, Rutgers University, November 1996.
- Performance Characterization of Image Understanding Algorithms, Department of Statistics, University of Madras, India, April 1996.

EDUCATION

Management Courses:

- Building and Managing Effective R&D organizations (MIT Sloan School of Management, 2005)
- Effective Sales and Communication Course, 2002
- Siemens Management course in Project Management, 1998

University Education:

PhD (1995) Department of Electrical Engineering
University of Washington, Seattle, Washington, USA.
MS (1987) Department of Electrical and Computer Engineering
Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA.
B.E. (1984) Department of Electronics and Communication
College of Engineering, Guindy, Madras, India
passed with Honors

HONORS AND AWARDS

- IEEE Longhuet-Higgins Prize for Fundamental Contributions to Computer Vision – 2010
- Siemens Inventor of the Year 2008 – for outstanding contributions in Real-time Vision & Modeling.
- Siemens PG Engineers Day Team award for Online Monitoring of Turbine Blades, 2004.
- Best Paper Award, IEEE Computer Vision & Pattern Recognition Conference, 2000.
- Recognition Award for Contributions to DARPA Image Understanding Environment, 1997.
- IBM Manufacturing Research Fellow, 1991 – 1993.

PROFESSIONAL ACTIVITIES

- Program committee/Reviewer, AAAI 2020, ICLR 2020, WACV 2020, ECCV 2020, ICML 2020, UAI 2020, CVPR 2020
- Senior Program Committee Member, IJCAI 2019
- Program committee/Reviewer, Neural and Information Processing (NIPS), 2016, 2017, 2018, 2019
- Program committee/Reviewer, AISTATS, 2016, 2017, UAI 2019
- Program committee/Reviewer, ICLR 2017, ICLR 2018, ICML 2018, ICML 2019
- Program Chair, IEEE Advance Video and Signal-Based Surveillance (AVSS), 2016.
- Program committee, Asian Conference on Computer Vision (ACCV), 2016
- Finnish Academy of Science, Data Analytics Panel Review Committee (2016)
- Program committee, IEEE Workshop on Group And Crowd Behavior Analysis And Understanding, 2015
- Program committee, IEEE Workshop on Applications in Computer Vision (WACV), 2012-2017
- Area Chair, European Conference on Computer Vision 2010
- US National Science Foundation Panel Committee Reviewer, December 2009
- Publicity Chair, IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2008.
- Workshop Chair, IEEE Motion and Video Analysis, Jan 2008.
- Program committee for IEEE CVPR, 2007.
- Program committee for ICAPR, 2007.
- Program committee for IEEE AVSS, 2007.
- Program committee for IEEE WACV, 2007.
- Program committee for IEEE CVPR, 2006.
- Program committee for IEEE VS 2006
- Program committee for IEEE IV 2006
- Program committee for IEEE VSSN 2006
- Program committee for IEEE Embedded Computer Vision, 2007.
- Organizing committee IEEE Embedded Computer Vision, 2005.
- Organizing committee IEEE Intelligent Vehicles Workshop 2005.
- Organizing Committee & Chair, Special Session on ID and Verification Technologies, in National Academy of Engineers, Frontiers in Engineering Conference, Sep 2005.
- Program committee IEEE PETS Workshop 2005.

- Program committee IEEE ICCV 2005.
- Program committee IEEE CVPR 2005.
- Program committee IEEE Empirical Evaluation Methods in Computer Vision 2005.
- Program committee ACM VSSN 2004.
- Program committee ICVGIP 2004.
- Program committee IEEE Visual Surveillance & PETS workshop 2003.
- Program Chair IEEE Advanced Video Based Surveillance 2003.
- Organizing committee IEEE Statistical Analysis in Computer Vision Workshop 2003.
- Program committee IEEE Workshop on Motion and Video Computing 2002.
- Program committee IEEE Workshop on Statistical methods for Video Analysis 2002.
- Guest editor for special issue on Video Surveillance on Proceedings of IEEE Oct 2001.
- Program committee IEEE CVPR 1999.
- Program committee Workshop on Performance Characterization of Vision Systems, Canary
  Islands, 1999.
- DARPA Image Understanding Environment Committee Member, (1991 – 1995).
- Past reviewer or referee for IEEE Transactions on Pattern Analysis and Machine Intelligence, CVIU, IEEE Transactions on Image Processing, Machine Vision and Applications, IEEE Expert journals.

REFEREED PUBLICATIONS

1. SEIFERT, P., HOTA, R., RAMESH, V., & GRUENEWALD, B., Chronic within-hive video recordings detect altered nursing behaviour and retarded larval development of neonicotinoid treated honey bees, Nature: Scientific Reports volume 10, Article number: 8727 (2020)
2. MUNDT, M., MAJUMDER, S., MURALI, S., PANETSOS, P., RAMESH, V. (2019): Meta-learning Convolutional Neural Architectures for Multi-target Concrete Defect Classification with the COncrete DEfect BRidge IMage Dataset. IEEE CVPR, 2019.
3. MUNDT, M., MAJUMDER, S., WEIS, T., RAMESH, V. (2018): Rethinking Layer-wise Feature Amounts in CNNs. NIPS Workshop, 2018.
4. HESS,T./ MUNDT, M. / WEIS, T./ RAMESH, V. (2017): Large-scale Stochastic Scene Generation and Semantic Annotation for Deep Convolutional Neural Network Training in the RoboCup SPL, International RoboCup Soccer Workshop, 2017, Japan (Nominated for Best Paper).
5. WEISS, T./ MUNDT, M./ HARDING, P./ RAMESH, V. (2017): Anomaly Detection for Automotive Visual Signal Transition Estimation, IEEE ITSC 2017.
6. VEERASAVARAPPU, S./ ROTHKOPF, C./ RAMESH, V. (2017): Adversarially Tuned Scene Generation IEEE CVPR 2017: 1063-1071
7. VEERASAVARAPPU, S./ ROTHKOPF, C./ RAMESH, V. (2017): Model-Driven Simulations for Computer Vision. IEEE WACV 2017: 1063-1071
8. ERNST, J./ SINGH, M./ RAMESH, V. (2012): Discrete texture traces: Topological representation of geometric context. Proceedings of IEEE CVPR 2012: 422-429
9. PARAMESWARAN,V./ SINGH, M./ RAMESH, V. (2010): Illumination Compensation using Order Consistency. Proceedings of IEEE CVPR 2010: 1982-1989.
10. TSIN, Y./ GENC, Y./ RAMESH, V. (2009): Explicit 3D Modeling for Vehicle Monitoring in Non - overlapping Cameras. AVSS 2009: 110-115
11. SINGH, M./ PARAMESWARAN, V./ RAMESH, V. (2008): Order Consistent Change Detection via Fast Statistical Significance Testing. CVPR 2008: 1 - 8
12. SHET, V.D./ NEUMANN, J./ RAMESH, V./ DAVIS, L.S. (2007): Bilattice-based Logical Reasoning for Human Detection. CVPR 2007: 1-8
13. DONG, L./ PARAMESWARAN, V./ RAMESH, V./ ZOGHLAMI, I. (2007): Fast Crowd Segmentation Using Shape Indexing. ICCV 2007: 1-8
14. TSIN, Y/ GENC, Y./ ZHU, Y./ RAMESH, V. (2007): Learn to Track Edges. ICCV 2007: 1-8
15. XIE, B./ RAMESH, V./ ZHU, Y./ BOULT, T. E. (2007): On Channel Reliability Measure Training for Multi-Camera Face Recognition. WACV 2007: 41
16. MITTAL, A./ RAMESH, V. (2006): An Intensity-augmented Ordinal Measure for Visual

Correspondence. In: CVPR (1) 2006; pp. 849-856.

17. PARAMESWARAN, V./ RAMESH, V./ ZOGHLAMI, I. (2006): Tunable Kernels for Tracking. In: CVPR (2) 2006; pp. 2179-2186.

18. OKADA, K./ SINGH, M./ RAMESH, V. (2006): Prior-Constrained Scale-Space Mean Shift, British Machine Vision Conference 2006(II:829).

19. RAMESH, V./ COMANICIU, D./ GENC, Y./ PARAGIOS, N./ ZHU, Y./ MITTAL, A./ ZOGHLAMI I./ GAO, X./ TSIN, Y. (2005): Real-Time Vision at Siemens Corporate Research, in Proceedings of IEEE Conference on Advanced Video Based Surveillance 2005, pp. 300-305.

20. LI, W./ GAO, X./ ZHU, Y./ RAMESH, V./ BOULT T. E. (2005): On the Small Sample Performance of Boosted Classifiers. In: CVPR (2) 2005; pp. 574-581.

21. HAN, T./ RAMESH, V./ ZHU, Y./ HUANG, T. (2005): Optimizing Template Matching Via Performance Characterization. In:ICCV (1): 2005; pp. 182-189.

22. ZHU, J.H./ , ZHU, Y./ RAMESH, V. (2005): Error-metrics for Camera Ego-motion Estimation, Workshop on Multi-view Modeling and Analysis of Visual Scenes, 2005, Vol. III: 67-67.

23. BASCLE, B./ GAO, X./ RAMESH, V. (2004): Parametric and Non-parametric Methods for Linear Extraction. In: ECCV Workshop SMVP 2004; pp. 175-186.

24. MONET, A./ MITTAL, A./ PARAGIOS, N./ RAMESH, V. (2003): Background Modeling and Subtraction of Dynamic Scenes. In: ICCV 2003; pp. 1305-1312.

25. NARASIMHAN, S. G./ RAMESH, V./ NAYAR, S. K. (2003): A Class of Photometric Invariants: Separating Material from Shape and Illumination. In: ICCV 2003, pp.1387-1394.

26. XIE, B./ COMANICIU, D./ RAMESH, V./ SIMON, M./ BOULT, T. E. (2003): Component Fusion for Face Detection in the Presence of Heteroscedastic Noise. In: DAGM-Symposium 2003; pp 434- 441.

27. COMANICIU, D./ RAMESH, V. (2002): Illumination Invariant Video Segmentation. In: Proceedings of the 36th Annual Conference on Information Sciences and Systems; Princeton, NJ, March 2002.

28. COMANICIU, D./ RAMESH, V./ DEL BUE, A. (2002): Multivariate Saddle Point Detection for Statistical Clustering. In: Proceedings of ECCV 2002, III: 561 ff.

29. GAO, X.,/ RAMESH, V./ BOULT, T. E. (2002): Statistical Characterization of Morphological Operator Sequences, In Proceedings of ECCV 2002, IV: 590 ff.

30. PARAGIOS, N./ ROUSSON, M./ RAMESH, V. (2002): Matching Distance Functions: a Shape-to-Area Variational Approach for Global-to-Local Registration. In: ECCV'02 European Conference in Computer Vision; June 2002, II: 775 ff.

31. ZHU, Y./ COMANICIU, D./ RAMESH, V./ SCHWARTZ, S. (2002): Multimodal Data Representations with Parameterized Local Structures. In: Proceedings ECCV '02: European Conference in Computer Vision, I: 173 ff.

32. DEL BUE, A./ COMANICIU, D./ RAMESH, V./ REGAZZONI, C.(2002): Smart cameras with real-time video object generation, Proceedings of IEEE International Conference on Image Processing 2002, III: 429-432.

33. COMANICIU, D./ RAMESH, V./ MEER, P. (2001): The Variable Bandwidth Mean Shift and Data- Driven Scale Selection. In: Proceedings of the 8th IEEE International. Conference on Computer Vision, ICCV 2001; Vol. 1; pp. 438-445.

34. TSIN, Y./ COLLINS, R.T./ RAMESH, V./ KANADE, T. (2001): Bayesian Color Constancy for Outdoor Object Recognition, in Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition, CVPR 2001, Vol.I, pp.1132-1139.

35. TSIN, Y.H./ LIU, Y.X./ RAMESH, V. (2001): Texture Replacement in Real Images, in Proceedings of the 2001 IEEE Computer Society Conference on Computer Vision and Pattern Recognition, CVPR 2001, Vol.2. , pp. 539-544.

36. GREIFFENHAGEN, M./ RAMESH, V./ NIEMANN, H. (2001): The Systematic Design and Analysis Cycle of a Vision System: a Case Study in Video Surveillance. In: Proceedings of the 2001 IEEE Computer Society Conference on Computer Vision and Pattern Recognition: CVPR 2001; Dec. 2001; Vol. 2; pp. 704-711.

37. PARAGIOS, N./ RAMESH, V. (2001): A MRF-Based Approach for Real Time Subway Monitoring. In: Proceedings of the IEEE International. Conference on Computer Vision & Pattern Recognition, CVPR 2001; VOL. 1; PP. 1034-1040.

38. STENGER, B./ RAMESH, V./ PARAGIOS, N. / COETZEE, F./ BOUHMANN, J. (2001): Topology Free Hidden Markov Models: Application to Background Modeling. In: IEEE International. Conference on Computer Vision, ICCV 2001; Vol. 1; pp. 294-301.

39. TSIN, Y./ RAMESH, V./ KANADE, T. (2001): Statistical Calibration of CCD Imaging Process. In: Proceedings of the IEEE International Conference on Computer Vision, ICCV 2001; Vol. 1; pp. 480- 487.

40. ZHU, Y. / COMANICIU, D./ RAMESH, V./ SCHWARTZ, S. (2001): Parametric Representations for Nonlinear Modeling of Visual Data. In: Proceedings of the 2001 IEEE Computer Society Conference on Computer Vision and Pattern Recognition: CVPR 2001; Dec. 2001; Vol. 2; pp. 553-560.

41. COMANICIU, D./ RAMESH, V. (2000): Mean Shift and Optimal Prediction for Efficient Object Tracking. In: Processing of the 7th IEEE International Conference on Image Processing; 2000. Vol. 3; pp. 70-73.

42. COMANICIU, D./ RAMESH, V./ MEER, P. (2000): Real Time Tracking of Non-Rigid Objects Using Mean Shift. Processing of the IEEE International. Conference on Computer Vision & Pattern Recognition, CVPR 2000; June 2000 Vol.2, pp.142-149.

43. GAO, X./ COETZEE, F./ RAMESH, V. / BOULT, T. E. (2000): Error Analysis of Background Adaption. In: Proceedings of the IEEE International. Conference on Computer Vision & Pattern Recognition, CVPR 2000; June 2000; Vol.1, pp. 503-510.

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72. SCHMID, A./ RAMESH, V./ VON DER MALSBURG, C. (2014): 'A Simple Dynamic Model for Image Interpretation', Bernstein Conference, Goettingen, September 2014.
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74. RAMESH, V./ VON DER MALSBURG, C. (2013): "Systems Engineering for Visual Cognition", Bernstein Conference, Tuebingen, September 2013.
75. HOTA, R. N./ HARDING, P./ VON DER MALSBURG, C./ RAMESH, V (2013): "Video Surveillance – Case study for cognitive vision", Bernstein Conference, Tuebingen, September 2013.
76. FRIEDRICH, H./ FERNANDES, T./ VON DER MALSBURG, C./ RAMESH, V. (2013): "Software Platform and Integration Framework for Rapid Cognitive Systems Engineering", Bernstein

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US PATENTS AWARDED

1. 8,548,231 -Predicate logic based image grammars for complex visual pattern recognition
2. 8,358,806 -Fast crowd segmentation using shape indexing
3. 8,212,812 -Active shape model for vehicle modeling and re-identification
4. 8,098,290 -Multiple camera system for obtaining high resolution images of objects
5. 8,073,244 -Automatic design of morphological algorithms for machine vision
6. 8,060,178 -System and method for performing probabilistic classification and decision support using multidimensional medical image databases
7. 7,995,809 -Refined segmentation of nodules for computer assisted diagnosis
8. 7,899,209 -Statistical modeling and performance characterization of a real-time dual camera surveillance system
9. 7,887,234 -Maximum blade surface temperature estimation for advanced stationary gas turbines in near-infrared (with reflection)
10. 7,881,531 -Error propagation and variable-bandwidth mean shift for feature space analysis
11. 7,865,019 - On optimizing template matching via performance characterization
12. 7,853,042 - Tunable kernels for tracking
13. 7,764,736 - Real-time video object generation for smart cameras
14. 7,680,335 - Prior-constrained mean shift analysis
15. 7,620,208 - System and method for detecting features from images of vehicles
16. 7,616,807 - System and method for using texture landmarks for improved markerless tracking in augmented reality applications
17. 7,602,941 - Component fusion for face detection
18. 7,593,547 - Video-based encroachment detection
19. 7,574,019 - Method for scene modeling and change detection
20. 7,555,046 - Method and system for searching and verifying magnitude change events in video surveillance
21. 7,499,570 - Illumination invariant change detection
22. 7,466,841 - Method for traffic sign detection
23. 7,458,936 - System and method for performing probabilistic classification and decision support using multidimensional medical image databases
24. 7,457,436 - Real-time crowd density estimation from video
25. 7,437,006 - Error propagation and variable-bandwidth mean shift for feature space analysis
26. 7,428,337 - Automatic design of morphological algorithms for machine vision
27. 7,336,803 - Method for scene modeling and change detection
28. 7,321,386 - Robust stereo-driven video-based surveillance
29. 7,294,817 - System and methods for determining non-uniformity correction parameters in detector-array imaging
30. 7,260,259 - Image segmentation using statistical clustering with saddle point detection

31.   7,200,269 - Non-rigid image registration using distance functions
32.   7,167,519 - Real-time video object generation for smart cameras
33.   7,139,409 - Real-time crowd density estimation from video
34.   7,095,890 - Integration of visual information, anatomic constraints and prior shape knowledge for medical segmentations
35.   7,095,401 - System and method for gesture interface
36.   7,079,992 - Systematic design analysis for a vision system
37.   7,079,674 - Variational approach for the segmentation of the left ventricle in MR cardiac images
38.   7,035,465 - Systems and methods for automatic scale selection in real-time imaging
39.   7,031,523 - Systems and methods for automatic scale selection in real-time imaging
40.   7,027,643 - Systems and methods for automatic scale selection in real-time imaging
41.   7,006,950 - Statistical modeling and performance characterization of a real-time dual camera surveillance system
42.   7,006,128 - Object detection for sudden illumination changes using order consistency
43.   6,999,004 - System and method for vehicle detection and tracking
44.   6,829,391 - Adaptive resolution system and method for providing efficient low bit rate transmission of image data for distributed applications
45.   6,590,999 - Real-time tracking of non-rigid objects using mean shift

RESEARCH GRANTS (IN LAST 6 YEARS)

- Bernstein Focus in Neuro Technology, Frankfurt am Main, German Ministry of Science and Education (Lead PI for revised proposal in Nov 2011, Funding: 4M euro).
- AEROBI – Aerial Robotic Inspection System, (Co-PI, EU Project, Funding: 482,725 euro, Dec 2015)
- Intelligent Data Analytics for Automotive, Sponsor: Continental Automotive GmbH, 471k euro, April 2016, Continuation Grant 128k euro (2018-2019).
- RESIST – EU H2020 Project, (Co-PI, EU Project, Funding: 232k euro, September 2018 - 2021).
- AISEL (AI Systems Engineering Laboratory), BMBF, 530k euro, September 2019 - 2021.

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REFERENCES

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