Curriculum Vitae
Sergiu Nedevschi, PhD E. E.
Professor of Computer Science
Computer Science Department
Technical University of Cluj-Napoca
Romania

Full Name: Sergiu S. Nedevschi
Nationality: Romanian
Job Title: Professor with Computer Science Department, manager of the Image Processing and Pattern Recognition Research Center.
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Work Address: Technical University of Cluj-Napoca, 28 Memorandumului Street, 400114, Cluj-Napoca, Romania

Academic Qualifications:
1975: Graduate of Technical University of Cluj-Napoca, Msc. in Electrical Engineering;
1993: PhD in Electrical Engineering at Technical University of Cluj-Napoca, Romania (thesis title "Model Based Object Recognition").
1975: Master degree in Electrical Engineering, Faulty of Electrical Engineering, Polytechnic Institute of Cluj-Napoca, Romania

Employment:
1975-1983: Senior Research Fellow, Research Institute for Computer Technologies, Cluj-Napoca branch, (I.T.C.Cluj filiala Cluj-Napoca);
1983-1991: Assistant Professor, Computer Science Department, TUCN;
1991-1994: Senior Assistant Professor, Computer Science Department, TUCN;
1994-1998: Associate Professor, Computer Science Department, TUCN;
1998-: Professor, Computer Science Department, TUCN;
2000-2004: Head of Computer Science Department, TUCN;
2004-2012: Dean of Faculty of Automation and Computer Science, TUCN;
2012-2020: Vice Rector of TUCN in charge with Scientific Research and ICT

Teaching:
I am currently teaching for English and Romanian classes the following courses:
- Pattern Recognition (4th year)
- Artificial Vision (master)
- Artificial Vision for Autonomous Driving (master)

Research areas:
- Image Processing and Pattern Recognition
- Computer Vision and Artificial Intelligence
- Machine Learning and Deep Learning based Perception
- 2D and 3D Sensors Based Perception (Camera, Stereo, LiDAR, RADAR)
- Semantic, Instance and Panoptic Segmentation, Structure from motion, Stereovision, LiDAR and RADAR Processing, Geometry and Semantic fusion, Object and Pedestrian Detection Tracking and Recognition, Environment Representation, Risk Assessment
- Intelligent Vehicles, Driving Assistance Systems, Autonomous Mobile Systems
- Medical Image Processing

Research Activity:

I was involved in 83 research projects, being the coordinator, local coordinator or manager of 65 of them. I have coordinated or managed 30 international projects from which 6 FP7, 1 Horizon 2020, 20 with companies and 3 bilateral projects.

The research activity carried out in the Image Processing and Pattern Recognition Research Lab established in 1998 and upgraded to Research Center in 2010.

Selected Projects:
1. "3D perception for autonomous vehicles based on deep learning - DeepPerception", PN III-P4-PCE-2021-1134, (2022-2024) - S. Nedevschi, project manager
2. "Integrated Semantic Visual Perception and Control for Autonomous Systems - SEPCA", PN-III-P4- PCCF, 293/ 21.08.2018 - S. Nedevschi**,** local coordinator. (2018-2022)
3. "Multispectral environment perception by fusion of 2D and 3D sensorial data from the visible and infrared spectrum – MULTISPECT", PN-III-P4-ID-PCE-2016-0727, - S. Nedevschi project manager. (2017-2020)
4. "Automated Urban Parking and Driving – **UP-Drive**", Horizon 2020, partners VW, ETH Zurich, IBM Zurich, University of Praga, - S. Nedevschi**,** local coordinator. (2016-2019)
5. "Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating Systems - R5-COP", FP7 ARTEMIS, - S. Nedevschi**,** local coordinator. (2014-2017)
6. "Image processing based on stereo and Mono cameras for Driver Assistance Systems", research project funded by Robert Bosch, Germany, - S. Nedevschi, coordinator (2013-2016)
7. "**PAN-Robots** - Plug And Navigate ROBOTS for smart factories", FP7, partners SICK Germany, VTT Finland, University of Modena, Electric 80, - S. Nedevschi**,** local coordinator. (2012 – 2015),
8. "Co-operative Mobility Services of the Future – **CoMoSeF**", Celtic Plus project, - S. Nedevschi**,** local coordinator. (2012-2015)
9. "Cooperative Advanced Driving Assistance System Based on Smart Mobile Platforms and Road Side Units – **SmartCoDrive**", Romanian Ministry of Education and Research, code PN II PCCA 2011 3.2-0742 from 03.07.2012, - S. Nedevschi**,** coordinator. (2012-2016)
10. "Multi-scale and multi-modal perception of the 3D dynamic environments by fusion of the dens stereo, dens optical flow and visual odometry data - **MULTISENS**", Romanian Ministry of Education and Research, code PN II IDEI 2011 - S. Nedevschi**,** project manager. (2012-2016)
11. "**DRIVE C2X**" - Accelerate cooperative mobility, FP7, - S. Nedevschi, local coordinator. (2011-2013).
12. "**INSEMTIVES** - Incentives for Semantics, FP7, S. Nedevschi - local coordinator. (2010-2012)
13. "Large Scale Semantic Computing Semantic Web technologies distributed reasoning probabilistic reasoning web-scale inference information retrieval – **LarkC**", FP7, (2010-2011), S. Nedevschi, local coordinator. (2010-2011)
14. "Perceptia senzoriala, modelarea si reprezentarea modelului lumii pentru sisteme de asistare a conducerii - **PERSENS**", Romanian Ministry of Education and Research, code PN-II-IDEI exploratory research, - S. Nedevschi**,** project manager. (2009-2011),
15. "Cooperative Intersection Safety – **INTERSAFE 2**", FP7, partners IBEO, VW, BMW, Volvo, INRIA, UTC-N, - S. Nedevschi, local coordinator. (2008-2011)

Publications:
Books:	20
Chapters in Books:	8
Papers:	432
In proceedings of international conferences	290
In journals	106
In ISI journals	47

Selected publications:
1. V. Chiciudean, F. Horatiu, Z. Blaga, R. Beche, F. Oniga, S. Nedevschi, Data Augmentation for Environment Perception with Unmanned Aerial Vehicles, IEEE Transactions on Intelligent Vehicles, 2024

2. V.C. Miclea, S. Nedevschi, Dynamic Semantically Guided Monocular Depth Estimation for UAV Environment Perception, IEEE Trans. on Geoscience and Remote Sensing, Vol. 62, AN 560511, May 2024

3. A Petrovai, S. Nedevschi, MonoDVPS: A Self-Supervised Monocular Depth Estimation Approach to Depth-aware Video Panoptic Segmentation, 2023 IEEE Winter Conference on Applications of Computer Vision (WACV), 2023, pp. 3076-3085

4. MP Muresan, S.Nedevschi, Multi-Object Tracking, Segmentation and Validation in Thermal Images, Proceeding of 2023 IEEE Intelligent Vehicles Symposium (IV 2023,Anchorage; Alaska,USA; June 4-7, 2023.

5. A Petrovai, S. Nedevschi, "Semantic Cameras for 360-degree Environment Perception in Automated Urban Parking and Driving", IEEE Transactions on Intelligent Transportation Systems, vol. 23, Issue 10, pp. 17271-17283, Oct 2022.

6. V.C. Miclea, S. Nedevschi, "Monocular Depth Estimation With Improved Long-Range Accuracy for UAV Environment Perception", IEEE Transactions on Geoscience and Remote Sensing, Vol. 60, AN 5602215, JAN 2022.

7. A Petrovai, S. Nedevschi, "Fast Panoptic Segmentation with Soft Attention Embeddings", SENSORS, Vol. 22, Issue 3, AN: 783, FEB 2022.

8. H. Florea, A. Petrovai, I. Giosan, F. Oniga, R. Varga, S. Nedevschi, "Enhanced Perception for Autonomous Driving Using Semantic and Geometric Data Fusion", SENSORS, Vol. 22, Issue 3, AN: 783, JUL 2022.

9. A. Petrovai, S. Nedevschi, Time-Space Transformers for Video Panoptic Segmentation, Proceedings of WACV, Hawaii, USA, 3-5 January 2022, pp. 925-934

10. Petrovai, S.Nedevschi, "Pseudo-annotation based unsupervised monocular depth estimation", 2022 Conference on Computer Vision and Pattern Recognition (CVPR). 19-24 June 2022, New Orleans, SUA.

11. R. Brehar, M.P. Muresan, M. Tiberiu, C. Vancea, N. Mihai, S. Nedevschi, "Pedestrian Street-Cross Action Recognition in Monocular Far Infrared Sequences", IEEE ACCESS, Vol. 9, pp. 74302-74324, JUN 2021.

12. M.P. Muresan, S. Nedevschi, R. Danescu, "Robust Data Association using Fusion of Data-Driven and Engineered Features for Real Time Pedestrian Tracking in Thermal Images", SENSORS, Vol. 21 Issue 23, AN 8005, NOV 2021.

13. V. Miclea, S. Nedevschi, Real-Time Semantic Segmentation-Based Stereo Reconstruction, *IEEE Transactions on Intelligent Transportation Systems*), 21(4),8751135, pp. 1514-1524, APR 2020.

14. R. Brehar, D. Mitrea, F. Vancea, T. Marita, S. Nedevschi, M. Lupsor, M. Rotaru, R. Badea, Comparison of Deep-Learning and Conventional Machine-Learning Methods for the Automatic Recognition of the Hepatocellular Carcinoma Areas from Ultrasound Images, SENSORS, Vol. 20, Issue 11, AN: 3085, JUN 2020.

15. M.P. Muresan, I. Giosan, S. Nedevschi,"Stabilization and Validation of 3D Object Position Using Multimodal Sensor Fusion and Semantic Segmentation", SENSORS, Vol. 20, Issue 4, AN: 1110, FEB 2020, DOI10.3390/s20041110

16. A. Petrovai, S. Nedevschi, Multi-Task Network for Panoptic Segmentation in Automated Driving", *Proceeding of 2019 IEEE Intelligent Transportation Systems Conference (ITSC)*, Auckland, New Zeeland, 26-30 October,2019.

17. S.E.C. Deac, I. Giosan, S. Nedevschi, "Curb Detection in Urban Traffic Scenarios Using LiDARs Point Cloud and Semantically Segmented Color Images", *Proceeding of 2019 IEEE Intelligent Transportation Systems Conference (ITSC)*, Auckland, New Zeeland, 26-30 October,2019.

18. A. Petrovai, S. Nedevschi, "Efficient instance and semantic segmentation for automated driving", *Proceeding of 2019 IEEE Intelligent Vehicles Symposium (IV 2019,* Paris; France; 9-12 June, 2019, pp. 2575-2581.

19. AD Costea, A. Petrovai, S. Nedevschi, "Fusion Scheme for Semantic and Instance-Level Segmentation", *Proceedings of 2018 IEEE Intelligent Transportation Systems Conference (ITSC)*, Maui, Hawaii, USA, November 4-7, 2018

20. V. Miclea, S. Nedevschi, " Real-Time Stereo Reconstruction Failure Detection and Correction Using Deep Learning", Maui, Hawaii, USA, November 4-7, 2018

21. V. Miclea, S. Nedevschi, „Real-Time Semantic Segmentation-Based Depth Upsampling Using Deep Learning", *Proceedings of 2018 IEEE Intelligent Vehicles Symposium (IV)*, Changshu, China, June 26-30, 2018

22. Lorenzo Sabattini, Mika AikioS,…,Sergiu Nedevschi, Cristian Secchi, and Kay Fuerstenberg, "The PAN-Robots Project: Advanced Automated Guided Vehicle Systems for Industrial Logistics", *IEEE ROBOTICS & AUTOMATION MAGAZINE*, pp. 55-64, MARCH 2018,

23. M. Drulea, A. Vatavu, Sz. Mandici, S. Nedevschi, "An Omnidirectional Stereo System for Logistic Plants. Part 1: Calibration And Multi-Channel Rectification", *Proceedings of Romanian Academy*, series A, Volume: 18 Issue: 1 pp. 89-97, 2017.

24. M. Drulea, A. Vatavu, Sz. Mandici, S. Nedevschi, "An Omnidirectional Stereo System for Logistic Plants. Part 2: Stereo Reconstruction and Obstacle Detection Using Digital Elevation Maps", *Proceedings of Romanian Academy*, series A, Volume: 18 Issue: 3 pp. 265-272, 2017.

25. VC Miclea, S Nedevschi, "Semantic segmentation-based stereo reconstruction with statistically improved long range accuracy", *Proceedings of 2017 IEEE Intelligent Vehicles Symposium (IV)*, Redondo Beach, CA, USA, June 11-14, 2017, pp. 1795-1802.

26. A. Costea, S. Nedevschi, "Traffic Scene Segmentation based on Boosting over Multimodal Low, Intermediate and High Order Multi-range Channel Features", *in Proceedings of 2017 IEEE Intelligent Vehicles Symposium (IV)*, Redondo Beach, CA, USA, June 11-14, 2017, pp. 74-81.

27. R. Varga, AD. Costea, H. Florea, I. Giosan, S. Nedevschi, "Super-sensor for 360-degree Environment Perception: Point Cloud Segmentation Using Image Features", *Proceedings of 2017 IEEE Intelligent Transportation Systems Conference (ITSC)*, Yokohama, Japan, best student paper award, 16-19 October, 2017, pp. 1-8.

28. AD Costea, R Varga, S Nedevschi, "Fast Boosting Based Detection Using Scale Invariant Multimodal Multiresolution Filtered Features", *Proceedings of 2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017, pp. 993-1002.

29. A. Costea, S. Nedevschi, "Semantic Channels for Fast Pedestrian Detection", *Proceedings of 2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, USA, June, 2016, pp. 2360-2368.

30. C. Vicas, S. Nedevschi, "Detecting Curvilinear Features Using Structure Tensors", *IEEE Transactions on Image Processing*, vol. 24, no. 11, pp. 3874 – 3887, Nov. 2015.

31. M. Negru, S. Nedevschi, RI Peter, Exponential Contrast Restoration in Fog Conditions for Driving Assistance, *IEEE Transactions on Intelligent Transportation Systems*, Vol. 16, No. 4, pp. 2257-2268, AUG 2015.

32. V. Popescu, S. Nedevschi, R. Danescu, T. Marita, A Lane Assessment Method Using Visual Information Based on a Dynamic Bayesian Network, *JOURNAL OF INTELLIGENT TRANSPORTATION SYSTEMS*, Vol. 19. No. 3, pp. 225-239, JUL 2015.

33. A. Vatavu, R. Danescu, S. Nedevschi, "Stereovision-Based Multiple Object Tracking in Traffic Scenarios Using Free-Form Obstacle Delimiters and Particle Filters", *IEEE Transactions on Intelligent Transportation Systems* , Vol. 16, No. 1, pp. 498-511, FEB. 2015.

34. R. Danescu and S. Nedevschi, "A Particle-Based Solution for Modeling and Tracking Dynamic Digital Elevation Maps", *IEEE Transactions on Intelligent Transportation Systems*, Vol. 15, No. 3, pp.: 1002-1015, JUN 2014.

35. M. Drulea, S. Nedevschi, "Motion estimation using the correlation transform", *IEEE Transactions on Image Processing*, vol. 22, no. 8, pp. 3260-3270, DEC 2013.

36. S. Nedevschi, V. Popescu, D. Radu, M. Tiberiu, F. Oniga, "Accurate Ego-Vehicle Global Localization at Intersections through Alignment of Visual Data with Digital Map", *IEEE Transactions on Intelligent Transportation Systems*, vol.14, Issue 2, pp. 673-687, JUN 2013.

37. R. Varga, S. Nedevschi, "Label transfer by Measuring Compactness", *IEEE Transactions on Image Processing*, MAY 2013.

38. C. Pantilie, S. Nedevschi, "SORT-SGM: Sub-pixel Optimized Real-Time Semi-Global Matching for Intelligent Vehicles", *IEEE Transactions on Vehicular Technology*, vol. 61, no. 3, pp. 1032-1042, MAR 2012.

39. I. Haller, S. Nedevschi, "Design of Interpolation Functions for Sub-Pixel Accuracy Stereo-Vision Systems", *IEEE Transactions on Image Processing*, vol. 21, no. 2, pp. 889-898, FEB 2012.

40. S. Nedevschi, S. Bota, C. Tomiuc, "Stereo-Based Pedestrian Detection for Collision-Avoidance Applications", *IEEE Transactions on Intelligent Transportation Systems*, 2009, vol. 10, no. 3, pp. 380-391, 2009.

41. R. Danescu, S. Nedevschi, "Probabilistic Lane Tracking in Difficult Road Scenarios Using Stereovision", *IEEE Transactions on Intelligent Transportation Systems*, vol. 10, no. 2, pp. 272-282, 2009.

42. S. Nedevschi, C. Vancea, T. Marita, T. Graf, "Online Extrinsic Parameters Calibration for Stereovision Systems Used in Far-Range Detection Vehicle Applications", *IEEE Transactions on Intelligent Transportation Systems*, vol. 8, no. 4, pp. 651-660, 2007.

Citations:
- h-index 28 in ISI Web of Science and 2961/2493 citations
- h-index 33 in Scopus and 4145 citations
- h-index 43 in Google Academic and 6931 citations

Activity:
- Associate Editor for IEEE Transactions on Intelligent Transportation Systems
- Associate Editor for Electronic Letters on Computer Vision and Image Processing
- Associate Editor for IEEE Transactions on Intelligent Vehicles
- Associate Editor for Proceedings of Romanian Academy Series A: Mathematics, Physics, Technical Sciences, Information Science
- Associate Editor for System Theory, Control and Computing Journal
- Reviewer: IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Vehicular Technologies, IEEE Transactions on Intelligent Vehicles, IEEE Transactions on Image Processing, IEEE Transactions on Pattern Analysis and Machine Intelligence, Computer Vision and Image Understanding, Optics and Lasers in Engineering, Sensors, Proceedings of Romanian Academy, etc.
- External PhD and habilitation evaluator at universities from Australia, France, Ireland, Nederland, Pakistan, Sweden
- Member of doctoral and habilitation committees at Romanian universities: UTCN, UBB, UPB, UPT, UTGA Iasi, USV, ULB Sibiu, U Craiova, IMAR
- Invited professor at Ecole Centrale de Nantes – Nantes University, France, Technical University Delft, Netherland, Mercedes-Benz Research and Development North America, Sunnyvale CA, USA, VTT Tampere and Helsinki, Finland, SICK Hamburg Germany, Chonnam National University from Gwangju, Korea, University of Limerick, Ireland, Technical University of Braunschweig and Technical University of Munich, Germany.
- Conference Chair, PC co-chair, PC member, member in the local organizing committee, session chair of more than 50 international conferences and workshops: IEEE IV Symposium, IEEE ITSC, IEEE ICCP, IEEE INES, CVVT:E2M, ICINCO, CSCS, SINTES, IEEE SACII. IEEE AQTR
- Evaluator of National Council of Academic Evaluation and Accreditation (CNEAA), 2001-2006
- Evaluator of Romanian Agency for Quality in Higher Education (ARACIS) in the field of Computer Science and Information Technology, 2007-2012
- Evaluator for EUROPEAN COMMISSION, FP7 programs, Information Society and Mediaa Directorate General, ICT for Transport, 2007
- Evaluator for EU COST programs, 2011
- Evaluator for French National Research Agency in CHIST-ERA programs, 2012
- Evaluator of National Council of Scientific Research in Higher Education (CNCSIS) Evaluator of National Agency for Scientific Research (ANCS), since 2005
- Evaluator ANSTI, since 2005
- Member of Romanian Academy of Technical Sciences (ASTR), since 2012
- President of Section 5 of Romanian Academy of Technical Sciences (ASTR), Information Technology and Communications, since 2023
- Member of Romanian Academy, since 2016

- Coordinator of the Intelligent Vehicles Commission within the Technical Sciences Section of the Romanian Academy, since 2020
- Member of the Coordination Council for Scientific Research in the Romanian Academy, since 2023
- Member of: IEEE Computer Society, IEEE Signal Processing Society, IEEE Intelligent Transportation Society, IEEE Vehicular Technology Society, IEEE Romania Computers Chapter
- Member of IEEE Romania Section Committee in charge with educational activities
- Member of Self Driving Automobiles technical committee of IEEE Intelligent Transportation Society, since 2018
- Member of National Council for Titles, Diplomas and Certificates (CNATDCU), 2006-2012
- President of the Engineering Sciences Panel of CNATDCU, 2010-2012
- Member of the CNATDCU's Computer, Information Technology and Systems Engineering Committee, since 2012
- President of CNATDCU's Computer, Information Technology and Systems Engineering Committee, since 2020
- Member of the Scientific Council of the National Center for Information Technology, 2004
- President of the Scientific Council of the TUCN, 2012-2020
- Member of the Scientific Council of the TUCN, since 2020
- Member of the Coordinating Council of the doctoral programs in Automation and Computers, 2017-2020
- Member of the Council for Doctoral University Studies of TUCN, since 2020
- Member of the Board of Directors of the North-West Regional Development Agency for the elaboration of the Region's Smart Specialization Strategy, since 2016 IEEE Vehicular Technology Society
- 27 PhD students received their PhD title under my coordination.

Awards and Honors:
- Member of Romanian Academy
- Member of Romanian Academy of Technical Sciences
- "Marius Hanganut" Prize of Technical University of Cluj-Napoca in 2005 for Achievements in Research Activity.
- "Constantin Budeanu" Romanian Academy Prize in 2009 for papers published in „Stereovision Based Sensorial Perception"
- "Best Associate Editor Award of the IEEE Transactions on Intelligent Transportation System" in 2011 given by IEEE Intelligent Transportation Systems Society in 2012,
- The "Henry Coandă" Prize for Applied Sciences for the year 2022 awarded on June 21, 2023 by the Romanian National Grand Lodge

September 2024   **Sergiu Nedevschi**
                                        Professor in Computer Science