

Kurzprofil

Prof. Dr.-Ing. Klaus-Dieter Kuhnert

Geburtsdatum	20.01.54
1972	2. Preis im Bundeswettbewerb Mathematik (1.Runde)
Studium 1974-1981	Technische Informatik an der RWTH Aachen
1982	Wissenschaftlicher Mitarbeiter am Institut für innere Medizin 1 der RWTH Aachen
1983 - 1988	Wissenschaftlicher Mitarbeiter am Institut für Messtechnik der UniBw-München
Promotion, 1988	Dissertation: Zur Echtzeit-Bildfolgenauswertung mit Vorwissen (summa cum laude, mit Auszeichnung)
Nakamura-Preis, 1988	für das beste Papier der „International Conference on Intelligent Robots and Systems 1989“ (überreicht 1989)
1989	Senior Researcher am R&D Center Yokohama der Mazda Motor Corporation (Hauptanmelder für ein internationales Patent)
1990	Wissenschaftler bei der Rheinmetall Forschung GmbH, Technologiezentrum Nord, Unterlüß (Hauptanmelder für ein internationales Patent)
1995	Fachgebietsleiter bei der Rheinmetall Forschung GmbH, Technologiezentrum Nord, Unterlüß
1996	Universitätsprofessor an der Universität Siegen; Fach: digitale Bildverarbeitung, Prozessdatenverarbeitung
Forschungspreis, 1998	der International Association for Pattern Recognition/ Workshop on Machine Vision Applications: “Most Influential Paper of the Decade Award”
Lehrgebiete:	• Digitale Bildverarbeitung • Mobile Roboter • Echtzeitsysteme
Forschungs- u. Arbeitsgebiete:	• Echtzeit Mustererkennung komplexer Szenen • Bildfolgenanalyse für 3D Szenen • Lernende Erkennungssysteme • Autonom mobile Systeme
Aktuelle Vorhaben:	• Mustererkennung durch Analogielernen • Fahrzeugsteuerung mittels Verstärkungslernen • AMOR (Autonomous Mobile Outdoor Robot) • Automatisches Parken
Aktuell:	• Seit 2004 Mitglied des Technical Committee 1 der IAPR (International Association for Pattern Recognition) • Seit 2005 European Editor des „International Journal of Intelligent Systems Technologies and Applications“ • Seit 2005 Gasteditor diverser IEEE Journale • 2005 Chairman des “International Workshop on Automatic Learning and Real-Time” ALaRT’05
Weitere Informationen	http://www.ezls.fb12.uni-siegen.de/

Schriftenverzeichnis

Prof. Dr.-Ing. Klaus-Dieter Kuhnert

Buchbeiträge und Publikationen in internationalen Zeitschriften

1. W. Dong and K.-D. Kuhnert, "Robust Adaptive Control of Nonholonomic Mobile Robots With Parameter and Nonparameter Uncertainties", *IEEE Transactions on Robotics*, Vol. 21[2], 2005, pp. 261-266
2. W. Dong and K.-D. Kuhnert, "Robust adaptive neural network based control of autonomous vehicles", *IEEE Transaction on Intelligent Transportation Systems*, 2004.
3. K.-D. Kuhnert and D. Pechtel, "Towards creating abstract features of complex objects - the fusion of contour points in significant contour sections", *Pattern Recognition Letters PATREC 1857*, 2002.
4. K.-D. Kuhnert, "Vision systems for mobile vehicles", *Automotive Mobile Vehicles*, ch. 12, Chapman and Hall, 1993.
5. V. Graefe and K.-D. Kuhnert, "Vision-based autonomous road vehicles", *I. Masaki Vision based Vehicle Guidance*, Springer Verlag, 1992, pp. 1-29.

Referierte Konferenzbeiträge

6. P. M. Stommel and K.-D. Kuhnert, "Appearance based recognition of complex objects by genetic prototype-learning", in *Proc. 13th Int'l Conf. in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG)*, Plzen, Czech Republic, January 31 – February 4, 2005.
7. T.W. Yang, W.J. O'Connor, K.-D. Kuhnert, and W.L. Xu, "Motion enhancement of a large macro-micro manipulator system through error compensation approach", accepted by the international conference on production, engineering, design and control", Alexandria, Egypt, Dec. 2004.
8. M. Stommel and K.-D. Kuhnert, "Subpixel accurate segmentation of small images using level curves", in *Proc. Int'l Conf. on Computer Vision and Graphics 2004 (ICCVG 04)*, Sept. 22–24, 2004, Warsaw, Poland
9. K.-D. Kuhnert and W. Dong, "Über die lernende Regelung autonomer Fahrzeuge mit neuronalen Netzen", *18. Fachgespräch Autonome Mobile Systeme (AMS 2003)*, Dec. 4–5, 2003, Karlsruhe, Germany
10. K.-D. Kuhnert and M. Krödel, "A learning autonomous driver system on the basis of image classification and evolutionary learning", *Conference Machine Learning and Data Mining 2003 (MLDM)*, July 5-7, 2003, Leipzig, Germany, Lecture Notes on Computer Science, Springer
11. A. Schanz, A. Spieker, and K.-D. Kuhnert, "Autonomous parking in subterranean garages – a look at the position estimation –", in *Proc. IEEE Intelligent Vehicles Symposium*, Columbus, Ohio, USA, June 2003
12. K.-D. Kuhnert and M. Krödel, "Behaviour learning by visual gestalt completion", *In-Vehicle Cognitive Computer Vision Systems (IVCCVS)*, April 3, 2003, Graz, Austria
13. A. Schanz, A. Spieker, K.-D. Kuhnert, "Towards automatic parking", *International Conference on Robotics, Vision and Parallel Processing 2003*, 22-24th January 2003, Penang, Malaysia
14. A. Schanz, A. Spieker, and K.-D. Kuhnert, "Towards automatic parking". in *Proc.*

International Conference on Robotics, Vision, Information and Signal Processing, Penang, Malaysia, January 2003

15. M. Krödel and K.-D. Kuhnert, „Reinforcement learning to drive a car by pattern matching“, *The 28th Annual Conference of the IEEE Industrial Electronics Society (IECON 2002)*, November 5-8, Sevilla, Spain, pp.1728–1734.
16. K.-D. Kuhnert, M. Krödel, and W. Dong, „Lernen als Paradigma für die Fahrerassistenzsysteme der nächsten Generation“, Workshop Fahrerassistenzsysteme, Oktober 9-11, 2002, Walting, Germany
17. A. Schanz, A. Spieker, and K.-D. Kuhnert, „Automatisches Einparken“, *Int'l Colloquium on Autonomous and Mobile Systems*, June 25-26, 2002, Magdeburg, Germany.
18. K.-D. Kuhnert, M. Krödel, „Autonomous driving by pattern matching and reinforcement learning“, *Int'l Colloquium on Autonomous and Mobile Systems*, June 25-26, 2002, Magdeburg, Germany
19. M. Krödel, K.-D. Kuhnert, „Pattern matching as the nucleus for either autonomous driving or driver assistance systems“, *IEEE Intelligent Vehicle Symposium (IV'2002)*, June 17-21, 2002, Versailles, France
20. A. Schanz, A. Spieker, U. Regensburger, and K.-D. Kuhnert, „Automated parking“, *Proc. International Colloquium on Autonomous and Mobile Systems*, June 2002, pp. 41–44.
21. M. Krödel and K.-D. Kuhnert, „Autonomous driving through intelligent image processing and machine learning“, *Int'l Conference on Computational Intelligence (7. Fuzzy Days)*, Oktober 1-3, 2001, Dortmund, Germany
22. D. Pechtel and K.-D. Kuhnert, „Towards feature fusion - the synthesis of contour sections distinguishing contours from different classes“, in *Proc. of 9th Discrete Geometry for Computer Imagery Conference (DGCI2000)*, Uppsala, Sweden, Dec. 13-15, p 12.
23. D. Pechtel and K.-D. Kuhnert, „Towards automatically learning an implicit model from 2D images based on a local similarity analysis of contours“, in *Proc. of IEEE/RSJ Int'l Conf. on Intelligent Robots and Systems (IROS 2000)*, Takamatsu, 30. October - 3. November, p 6.
24. M. Krödel and K.-D. Kuhnert, „Towards a Learning Autonomous Driver system“, *2000 IEEE International Conference on Industrial Electronics, Control and Instrumentation, (IECON-2000)*, October 22-28, 2000, Nagoya
25. G.H. Bakir and K.-D. Kuhnert, „Multi-mobile-robot simulation for everyone“, *5th International Symposium on Distributed Autonomous Robotic systems (DARS 2000)*, Oak Ridge, USA, 4-6 Oktober, 2000.
26. D. Pechtel and K.-D. Kuhnert, „Ein Lern- und Klassifikationssystem zur Erkennung komplexer und/oder deformierter 2Dobjektkonturen mit Merkmalsfusion“, in *Proc. 20. DAGM-Symposium (DAGM2000)*, Kiel, September 13-15, 2000.
27. D. Pechtel and K.-D. Kuhnert, „Towards feature fusion - A classifier on the basis of automatically generated significant contour sections“, in *Proc. of 24th Annual Conference Gesellschaft für Klassifikation e.V. (GfKI2000)*, Passau, Germany, March 15–17, 2000.
28. D. Pechtel and K.-D. Kuhnert, „Automatic generation of significant and local feature groups of complex and deformed objects“, in *Proc. of the 10th Int'l Conf. on Image Analysis and Processing (ICIAP99)*, 1999, Venice, Italy, pp. 340-345.
Prof. Dr.-Ing. K.-D. Kuhnert, Institut für Echtzeit Lernsysteme, Universität Siegen, www.ezls.fb12.uni-siegen.de 4
29. D. Pechtel and K.-D. Kuhnert, „Generating automatically local feature groups of complex and deformed objects“, In Gaul, W. and Decker, R. (Eds.): in *Proc. of 23rd Annual Conference Gesellschaft für Klassifikation e.V.*, 1999, Bielefeld, Germany, pp. 237-244.

30. K.-D. Kuhnert, "Recognition of complex objects for sorting post consumer goods by using image processing and neural networks", in *Proc. of the Fifth International Conference on Mechatronics and Machine Vision in Practice*, Nanjing, China, September 10-12, 1998, pp. 265-270.
31. K.-D. Kuhnert, "A 3D sensor for laser welding", *26th Int. Symposium. on Automotive Technology and Automation*, Aachen, Germany, Sept. 1993, pp. 203-211.
32. K.-D. Kuhnert, "Elastic nets and vision based autonomous navigation", Invited Paper to *IEEE international conference on industrial electronics ISIE'93*, Budapest, June 1993
33. K.-D. Kuhnert, "Qualitative motion stereo for high speed car driving", *International Conf. on Intelligent Systems and Robots*, Raleigh, USA, 1992
34. K.-D. Kuhnert and H. Takahashi, "High precision optical vibration measurement on a running car", in *Proc. of the First International Conf. On Motion and Vibration Control*, Yokohama, 1992
35. K.-D. Kuhnert and H. Takahashi, "Evaluation of optical distance measurement for car control applications", in *Proc. International Symposium on Advanced Vehicle Control*, Yokohama, 1992
36. K.-D. Kuhnert and K.P. Wershofen, „Echtzeit-Rechnersehen auf der Experimental-Plattform ATHENE“, Rembold, Dillmann (eds.): *6. Fachgespräch Autonome Mobile Systeme*, Karlsruhe, 1990, pp. 59-68.
37. K.-D. Kuhnert, „Dynamic vision guides the autonomous vehicle ATHENE“, Japan-USA *Symposium on Flexible Automation*, Kyoto, July 1990, pp. 507-510.
38. K.-D. Kuhnert, „Fusing dynamic vision and landmark navigation for autonomous driving“, *Proc IEEE/RSJ int. Conference on intelligent Robots and Systems, IROS 90*, Tsuchiura 1990, pp. 113-119.
39. K.-D. Kuhnert, „Real-time suited road border recognition utilizing a Neural Network technique“, *Proc. IEEE/RSJ int. Workshop on intelligent Rotots and Systems, IROS 89*, Tsukaba 1989, pp. 358-363.
40. K.-D. Kuhnert, „Sensor modeling as basis of subpixel image processing“, J.Duveray (ed.): *Image Processing III. Proc. Od the SPIE*, Vol. 1135, 1989
41. K.-D. Kuhnert, „Zur Echtzeit-Bildfolgenanalyse mit Vorwissen“, Dissertation, Fakultät für Luft- und Raumfahrttechnik der Universität der Bundeswehr München, 1988.
42. K.-D. Kuhnert and V. Graefe, „Vision systems for autonomous mobility“, *Proc IEEE/RSJ int. Workshop on intelligent Robots and Systems, IROS'88*, Tokyo 1988
43. V. Graefe and K.-D. Kuhnert, „Towards a vision based robot with a driver's licence“, *Proc. IEEE/RSJ int. Workshop on intelligent Robots amd Systems, IROS'88*, Tokyo 1988, pp. 627-632.
44. K.-D. Kuhnert and V. Graefe, „A High Speed Image Processing System Utilized in Autonomous Vehicle Guidance“, in *Proc. IAPR Workshop on Computer Vision*, Tokyo Oct. 12-14, 1988, pp. 10-13.
45. V. Graefe and K.-D. Kuhnert, „Low-level vision for advanced mobile robots“, T. Martin (ed): *International Advanced Robotics Program - Proceedings of the First Workshop on Manipulators, Sensors and Steps towards Mobility*, Kernforschungszentrum Karlsruhe, KFK 4316, 1987, pp. 239-246.
46. K.-D. Kuhnert, „Comparison of intelligent real-time algorithms for guiding an autonomous vehicle“, L.O. Hertzberger (ed.): *Proceedings: Intelligent Autonomous Systems*, Amsterdam

1986, pp. 334-339.

47. K.-D. Kuhnert, „A vision system for real-time road and object recognition for vehicle guidance“, W.J. Wolfe, N. Marquina (eds.): *Mobile Robots, Proceedings of the SPIE*, Vol. 727, 1986, pp. 267-272.
48. K.-D. Kuhnert, „A model-driven image analysis system for vehicle guidance in real-time“, *Proceedings of the Second International Electronic Image Week CESTA*, Nice 1986, pp. 216-221.
49. K.-D. Kuhnert and A. Zapp, „Wissensgesteuerte Bildfolgenauswertung zur Automatischen Führung von Straßenfahrzeugen in Echtzeit“, H. Niemann (ed.): *Mustererkennung 1985*, Informatik Fachberichte 107, Springer-Verlag 1985, pp. 102-106.
50. W. Schätzl and K.-D. Kuhnert, „Towards the evaluation of learning and intelligence“, T.O.Shea (ed.): *ECAI 84, Proc. Sixth European Conference on Artificial Intelligence*, Pisa, 1984, p. 511.
51. K.-D. Kuhnert, „Towards the objective evaluation of low-level vision operators“, T.O.Shea (ed.): *ECAI 84, in Proc. Sixth European Conference on Artificial Intelligence*, Pisa 1984, p. 657.
52. K.-D. Kuhnert, „Belastungs-Ganzkörperplethysmographie“, 1. *Lüdenscheider Arbeitsgespräch zur Belastungsdyspnoe*, Münchener Werbegesellschaft und Verlag, Gedon und Reuss, 1982.