Publications, Patents, Talks

2013

Philips Lehrstuhl für Medizinische Informationstechnik
Helmholtz-Institut für Biomedizinische Technik
Rheinisch-Westfälische Technische Hochschule Aachen

Philips Chair for Medical Information Technology
Helmholtz-Institute for Biomedical Engineering
RWTH Aachen University

Director:
Univ.-Prof. Dr.-Ing. Dr. med. Steffen Leonhardt

Buchbeiträge mit Beteiligung des Lehrstuhls 2013 / *Book Chapters*

[1]   M. Köny, J. Benzko, M. Czaplik, B. Marschollek, M. Walter, R. Rossaint, K. Radermacher, S. Leonhardt, "The Smart Operating Room – smartOR"; Q. A. Memon, Distributed Networks: Intelligence, Security, and Applications, CRC Press, pp. 292-316, August 2013 CRC Press

Buchbeiträge mit anonymem Gutachterwesen 2013 / Peer-reviewed book chapters 2013

[1]   M. Ulbrich, S. Weyer, J. Mühlsteff, M. Walter, S. Leonhardt, „Evaluation of a swine model for impedance cardiography - a feasibility study", Lecture Notes on Impedance Spectroscopy, Volume 4, Pages 39 – 44, CRC Press November 2013, Print ISBN: 978-1-138-00140-4, eBook ISBN: 978-1-315-79567-6.

[2]   S.A. Santos, M. Czaplik, S. Leonhardt, „Impedance spectroscopy study of healthy and atelectatic lung segements of mini pigs", Lecture Notes on Impedance Spectroscopy, Volume 4, Pages 45 – 50, CRC Press November 2013, Print ISBN: 978-1-138-00140-4, eBook ISBN: 978-1-315-79567-6.

[3]   T. Schlebusch, S. Nienke, D. Leonhäuser, J. Grosse, S. Leonhardt, „Optimal electrode positions to determine bladder volume by bioimpedance spectroscopy", Lecture Notes on Impedance Spectroscopy, Volume 4, Pages 67 – 74, CRC Press November 2013, Print ISBN: 978-1-138-00140-4, eBook ISBN: 978-1-315-79567-6.

[4]   C. Brendle, A. Niesche, A. Korff, R. Radermacher, S. Leonhardt, "Influence of sliding contact on impedance monitoring in a smart milling tool", Lecture Notes on Impedance Spectroscopy, Volume 4, Pages 83 – 90, CRC Press November 2013, Print ISBN: 978-1-138-00140-4, eBook ISBN: 978-1-315-79567-6.

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[1] M. Czaplik, M. Ulbrich, R. Pikkemaat, S. Leonhardt, „Gerät zur Kontrolle der ordnungsgemäßen Platzierung eines Beatmungstubus durch mehrkanalige Messung der elektrischen Impedanz", DE 10 2013 200 712.4, Anmeldetag 18.01.2013.

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Artikel in Zeitschriften
mit anonymem Gutachterwesen 2013 /
Papers in peer-reviewed Journals 2013

[1] S. Kim, C. Brendle H.Y. Lee, M. Walter, S. Gloeggler, S. Krueger, S. Leonhardt, "Evaluation of a 433 MHz Band Body Sensor Network for Biomedical Applications", *Sensors* (Basel). 2013 Jan 14;13(1):898-917. doi: 10.3390/s130100898.

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Journal Reprints from Conference Publications:

[18]   T. Schlebusch, S. Leonhardt, „Effect of electrode arrangements on bladder volume estimation by electrical impedance tomography", *J. Phys.: Conf. Ser.* 434 012080. doi: 10.1088/1742-6596/434/1/012080.

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[20]   M. Ulbrich, B. Marleaux, J. Mühlsteff, F. Schoth, R. Koos, D. Teichmann, S. Leon-hardt, "High spatial and temporal resolution 4D FEM simulation of the thoracic bioim-pedance using MRI scans", *J. Phys.: Conf. Ser.* 434 012074, 2013. doi: 10.1088/-1742-6596/434/1/012074.

[21]   D. Teichmann, J. Foussier, D. Löschcke, S. Leonhardt, M. Walter, „MonitoRing – Magnetic induction measurement at your fingertip", *J. Phys.: Conf. Ser.* 434 012084, 2013. doi: 10.1088/1742-6596/434/1/012084.

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[24] M. Czaplik, C.H. Antink, R. Rossaint, S. Leonhardt, "Application of internal electrodes to the oesophageal and tracheal tube in an animal trial: evaluation of its clinical and technical potentiality in electrical impedance tomography", *J Clin Monit Comput.* 2013 Nov 27. [Epub ahead of print].

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[50] J. Foussier, P. Fonseca, X. Long, B. Misgeld, S. Leonhardt, "Combining HRV Features for Automatic Arousal Detection", *Computing in Cardiology* (CinC), Zaragoza, Sep. 22nd - 25th, 2013.

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[53] M. Ulbrich, M. Czaplik, A. Pohl, M. Zink, and S. Leonhardt, "Estimation of blood alcohol content with bioimpedance spectroscopy", *International Workshop on Impedance Spectroscopy* (IWIS), Chemnitz, 25. – 27. Sep. 2013.

[54] D. Rüschen, S. Kim, S. Leonhardt, B.J.E. Misgeld, „Sliding Mode Beobachter basierte Orientierungsschätzung mittels Body Sensor Network integrierter Inertialsensorik", 11. Workshop AUTOMED 2013, Dresden, 10. -11. Oktober 2013.

[55] C. Brendle, A. Niesche, A. Korff, K. Radermacher, B. Misgeld and S. Leonhardt; „Rapid Control Prototyping Versuchsaufbau zur Erprobung eines impedanzkontrollierten chirurgischen Fräsers in der Revisionshüftprothetik", 11. Workshop AUTOMED 2013, Dresden, 10. -11. Oktober 2013.

[56] C. Gemein, E. Schmitz, A. Pohl, M. Zink, B. Bellmann, D. Erkapic, J. Schmitt, C. Hamm, S. Leonhardt, and P. Schauerte, "Triggered Cardiac Neurostimulation elicits Functional and Trophic Effects on Cardiac Neurocytes", *Herbsttagung und Jahrestagung der Arbeitsgruppe Rhythmologie* (DGK), Dresden, 10. – 12. Oktober 2013, Clin Res Cardiol 102, Suppl 2, doi:10.1007/s00392-013-2100-x.

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[58] I.M. Elixmann, C. Goffin, M. Walter, K. Radermacher, „Robust Control of Intracranial Pressure with an Electromechanical Extra-Ventricular Drainage", IEEE International Conference on Systems, Man and Cybernetics (IEEE SMC 2013), Manchester, Oct 13th - 16th, 2013.

[59] A. Pohl, C. Gemein, J. Orschulik, E. Schmitz, A. Idrissi, N. Hatam, P. Schauerte, and S. Leonhardt, "Electrical Neurostimulation of Isolated Sympathetic Nervous Rat Cells of the Superior Cervical Ganglia", *6th Biomedical Engineering International Conference (BMEiCON 2013)*, IEEE, Thailand, Oct. 23rd – 25th, 2013.

[60]   A. Pohl, B. Bellmann, N. Hatam, P. Schauerte, and S. Leonhardt, "Heart Cycle Length Modulation by Electrical Neurostimulation in the High Right Human Atrium", *2nd International Conference on Life Science and Engineering* (ICLSE), Hong Kong, Oct. 26th – 27th, 2013.

[61]   K. Gerlach-Hahn, C. Dahmen, B. Misgeld and S. Leonhardt, „Design and evaluation of a serial elastic actuator for human assistance", XXIV International Conference on Information, Communication and Automation Technologies, Sarajevo, 30. Oct. - 1. Nov. 2013.

[62]   J. Foussier, X. Long, P. Fonseca, B. Misgeld, S. Leonhardt, "On the Relationship of Arousals and Artifacts in Respiratory Effort Signals", IEEE International Conference on Health Informatics, Vilamoura, Portugal, Nov. 7-9th, 2013.

[63]   A. Böhm, A. Uhlig, S. Leonhardt, "Strategies for baseline drift compensation of DC-coupled EOG measurements for HCI", ICBME 2013, Singapore, Dec. 4th – 7th, 2013.

[64]   C. Brendle, A. Niesche, A. Korff, K. Radermacher, B. Rein, A. Scholl, B. Misgeld, S. Leonhardt, „Modeling of Bioimpedance Spectroscopy Measurements for the Process Control of an Orthopedic Surgical Milling Tool", ICBME 2013, Singapore, Dec. 4th - 7th, 2013.

[65]   N. Blanik, C. Pereira, M. Czaplik, V. Blazek, S. Leonhardt, "Remote Photoplethysmographic Imaging of Dermal Perfusion in a porcine animal model", ICBME 2013, Singapore, Dec. 4th - 7th, 2013.

[66]   A. Pomprapa, B. Lachmann, P. Pickerodt, D. Schwaiberger, S. Leonhardt, "Artificial intelligence in automatic ventilation therapy using Open Lung concept", 7th International Conference on Software, Knowledge, Information Management and Applications (SKIMA 2013), Chiang Mai, Dec 18th - 20th, 2013.

Eingeladene Vorträge 2013 / Invited Talks and Lectures 2013

[1]   D. Schwaiberger and A. Pomprapa, „Closed-loop ARDSnet Protokoll", 23. Symposium Intensivmedizin & Intensivpflege, Bremen, 13. – 15. Feb. 2013.

[2]   S. Leonhardt, „Wie funktioniert die EIT?", 23. Symposium Intensivmedizin & Intensivpflege, Bremen, 13. – 15. Feb. 2013.

[3]   S. Leonhardt, „Bestimmung des Herzschlagvolumens und der Perfusion mit der EIT", 23. Symposium Intensivmedizin & Intensivpflege, Bremen, 13. – 15. Feb. 2013.

[4]   K. Lunze, S. Leonhardt, "Modellbildung und Regelung der Blutzuckerkonzentration im diabetischen Göttingen Minipig", 47. Regelungstechnisches Kolloquium, Boppard, Deutschland, 20. – 22. Feb. 2013.

[5]   S. Leonhardt, „Elektrische Impedanztomographie – Geschichte, Stand der Technik und Potentialanalyse für den klinischen Einsatz", Nordrhein-Westfälische Akademie der Wissenschaften und der Künste, Klasse für Ingenieur- und Wirtschaftswissenschaften, Düsseldorf, 17.04.2013.

[6]   S. Leonhardt, „Techniques for Contact-free Monitoring - Current Applications and Challenges", 9th IEEE-EMBS *International Summer School and Symposium on Medical Devices and Biosensors* (MDBS'13), Hong Kong, June 30th, 2013.

[7]   S. Leonhardt, „Advances in Capacitive Biopotential Monitoring", Mini-Symposium on Dry and Non-contact Brain-machine-body Interfaces (invited), 35th *Annual International Conference of the* IEEE EMBS, Osaka, Japan, July 3-7, 2013.

[8]   V. Blazek, „Mit Licht unter die Haut – bewährte und zukünftige Sensorkonzepte für optoelektronische Kreislaufdiagnostik. Kurt-Schwalbe-Institut, Waldheim, July 17th, 2013

[9]   S. Leonhardt, „Electrical Impedance Tomography for the ICU – Progress in Monitoring at the Bedside", Seminar at the Hamlyn Centre, Imperial College, London, Aug. 14th, 2013.

[10]   S. Leonhardt, „Physiologische Regelsysteme", ATAC Symposium, Aachen, 5.-6. Sep. 2013.

[11]   B. Misgeld, "Regelung von nachgiebigen Antrieben für die Rehabilitationsrobotik", ATAC Symposium, Aachen, 5.-6. Sep. 2013.

[12]   M. Walter, „Automatisierte Herz- und Lungenunterstützungssysteme", ATAC Symposium, Aachen, 5.-6. Sep. 2013.

[13]   S. Leonhardt, *„Control meets Medicine* – zur zukünftigen Bedeutung der Meß- und Automatisierungstechnik in der Medizin", Fest-Kolloquium zum 75. Geb. von Univ.-Prof. Dr.-Ing. Dr. h.c. Rolf Isermann, TU Darmstadt, 7. Sep. 2013.

[14] V. Blazek, „Lékařská technika a diagnostika made in Aachen - autokauzistika akutní srdeční příhody", Lecture 1, EU Teaching Program, Univ. of Zilina, SK, Sept. 19th, 2013.

[15] V. Blazek, „Interakce optického záření s biologickou tkání - základy tkáňové optiky a metoda Monte Carlo", Lecture 2, EU Teaching Program, Univ. of Zilina, SK, Sept. 20th, 2013.

[16] V. Blazek, „Moderní optické zobrazovací metody v lékařské diagnostice", Lecture 3, EU Teaching Program, Univ. of Zilina, SK, Sept. 20th, 2013.

[17] V. Blazek, „Vybrané aktivity na MedIT/RWTH: Diagnostické aplikace funkční infra-červené termografie", Lecture 4, EU Teaching Program, Univ. of Zilina, SK, Sept. 23th, 2013.

[18] S. Leonhardt, „Closed-Loop-Anwendungen für die Medizin", 11. AUTOMED Work-shop, TU Dresden, 10.-11. Okt. 2013.

[19] B. Misgeld, „IPANEMA BSN: Towards closed-loop supervision and decision support in rehabilitation robotics", IFMBE International Conference on Health Informatics (ICHI 2013), Vilamoura, Portugal, 7-9 November, 2013.

[20] V. Blazek, "Photoplethysmography – from Hertzman in 1938 to 2013 and beyond", Keynote lecture, XXXVIII. Phlebological Congress , Prague, Nov. 8th, 2013.

[21] T. Wartzek, S. Leonhardt, "Unobtrusive Monitoring at Home", 2nd Conference on Innovations in Assistive Technologies and Health Care Smart Homes 2013, Prague, Czech Republic, November 14th, 2013.

[22] S. Leonhardt, „Techniques for Contact-free Monitoring - Current Applications and Challenges", Technological Advances in Healthcare (TAH 2013), Bengal Engineering & Science University (BESU), Shibpur, P.O. Botanic Garden, Howrah-711 103, India, Dec. 6th, 2013.

[23] S. Leonhardt, „Techniques for Contact-free Monitoring - Current Applications and Challenges", Indian Institute of Technology Madras (IITM), Chennai, India, Dec. 9th, 2013.

Organisation von eingeladenen Sitzungen
im Jahr 2013
Organisation of special sessions in 2013

[1]   B. Misgeld and S. Leonhardt: Special Session on Modelling and Automatic Control Biomedical Systems, IEEE Int. Conf. on Systems, Man, and Cybernetics (SMC 2013), Manchester, UK, 13 - 16 October, 2013.