Publications, Patents, Talks

2018

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. Dr. h.c. Steffen Leonhardt

Bücher 2018 / Books 2018

Buchbeiträge mit anonymem Gutachterwesen 2018 / Peer-reviewed book chapters 2018

1. Carina Barbosa Pereira, Xinchi Yu, Stephan Dahlmanns, Vladimir Blazek, Steffen Leonhardt, Daniel Teichmann, „Infrared Thermography", Mulit-Modality Imaging, Applications and Computational Techniques, pp. 1–30, Springer Verlag 2018, Print ISBN: 978-3-319-98973-0, eBook ISBN: 978-3-319-98974-7, DOI: 10.1007/978-3-319-98974-7.

2. Vladimir Blazek, Stepan Dahlmanns, Carina Barbosa Pereira, Xinchi Yu, Nikolai Blanik, Steffen Leonhardt, Claudia Rosa Blazek, „Photoplethysmography Imaging and Common Optical Hybrid Imaging Modalities", Mulit-Modality Imaging, Applications and Computational Techniques, pp. 31–66, Springer Verlag 2018, Print ISBN: 978-3-319-98973-0, eBook ISBN: 978-3-319-98974-7, DOI: 10.1007/978-3-319-98974-7.

Patentanträge und erteilte Patente mit Beteiligung des Lehrstuhls 2018 / *Granted Patents and filed Patent Applications 2018*

Artikel in Zeitschriften
mit anonymem Gutachterwesen 2018 /
Papers in peer-reviewed Journals 2018

1. H.F.N. Al-Shuka, S. Leonhardt, W.-H. Zhu, R. Song, C. Ding, Y. Li, "Active Impedance Control of Bioinspired Motion Robotic Manipulators: An Overview", ***Applied Bionics and Biomechanics***, Oct. 2018, aop, pp 1-19, https://doi.org/10.1155/2018/8203054.

2. M. Czaplik, M. Ulbrich, N. Hochhausen, R. Rossaint, S. Leonhardt, "Evaluation of a new non-invasive measurement technique based on bioimpedance spectroscopy to estimate blood alcohol content: a pilot study"; ***Biomed. Eng.-Biomed. Tech.***, June 2018, aop, https://doi.org/10.1515/bmt-2018-0070.

3. S. Delbeck, T. Vahlsing, S. Leonhardt, G. Steiner, H.M. Heise, "Non-invasive monitoring of blood glucose using optical methods for skin spectroscopy – opportunities and recent advances" ***Analytical and Bioanalytical Chemistry***, Oct. 2018, aop, pp 1-15, https://doi.org/10.1007/s00216-018-1395-x

4. B. Hentze, T. Muders, H. Lüpschen, E. Maripuu, G. Hedenstierna, C. Putensen, M. Walter, S. Leonhardt, "Regional lung ventilation and perfusion by electrical impedance tomography compared to single-photon emission computed tomography", ***Physiological Measurement***, June 2018 (39), pp 1-15, https://doi.org/10.1088/1361-6579/aac7ae.

5. N. Hochhausen, C. Barbosa Pereira, S. Leonhardt, R. Rossaint, M. Czaplik, "Estimating Respiratory Rate in Post-Anesthesia Care Unit Patients Using Infrared Thermography: An Observational Study", **Sensors**, 2018, 18(5), 1618, pp. 1 - 12; https://doi.org/10.3390/s18051618

6. J. Kunczik, M. Köny, M. Czaplik, V. Blazek, S. Leonhardt, "Pain and Stress Management during General Anesthesia using the Respiratory Sinus Arrhythmia", **Clinician and Technology,** 2017, Vol. 47 (4), pp. 135 - 140.

7. L. Leicht, E. Skobel, C. Knackstedt, M. Mathissen, A. Sitter, T. Wartzek, W. Möhler, S. Reith, S. Leonhardt, "Capacitive ECG Montioring in Cardica Patients during Simulated Driving", ***IEEE Transaction on Biomedical Engineering***, April 2018, Volume: PP, Issue: 99, Pages: 1 - 10, DOI 10.1109/TBME.2018.2855661, IEEE.

8. S. Leonhardt, L. Leicht, D. Teichmann, "Unobtrusive Vital Sign Monitoring in Automotive Environments – A Review", ***Sensors***, 2018, 18, pp 1-38, doi:10.3390/s18093080

9. D. Leonhäuser, C. Castelar, T. Schlebusch, M. Rohm, R. Rupp. S. Leonhardt, M. Walter, J.O. Grosse, "Evaluation of Electrical impedance tomography for determination of urinary bladder volume: comparison with standard ultrasound methods in healthy volunteers", ***BioMedical Online***, 2018, 17 (95), pp. 1-13, https://doi.org/10.1186/s12938-018-0526-0.

10. L. Liu, S. Leonhardt, B. Misgeld, "Experimental Validation of a Torque-Controlled Variable Stiffness Actuator Tuned by Gain Scheduling", ***IEEE/ASME Transaction on Mechatronics***, 2018, 23(5): 2109-2120, doi: 10.1109/TMECH.2018.2854416.

11. B. Misgeld, L. Hewing, L. Liu, S. Leonhardt, "Closed-loop positive real optimal control of variable stiffness actuators", **Control Engineering Practice**, 2018, 82 (2019), pp. 142-150, https://doi.org/10.1016/j.conengprac.2018.08.022.

12. C. Ngo, S. Dahlmanns, T. Vollmer, B. Misgeld, S. Leonhardt, „An object-oriented computational model to study cardiopulmonary hemodynamic interactions in humans", **Computer Methods and Programs in Biomedicine**, 2018, 159, pp. 167 - 183, https://doi.org/10.1016/j.cmpb.2018.03.008.

13. C. Ngo, F. Dippel, K. Tenbrock, S. Leonhardt, S. Lehmann, "Flow-volume loops measure with electrical impedance tomography in pediatric patients with asthma", **Pediatric Pulmonology,** 2018, pp. 1-9, DOI: 10.1002/ppul.23962.

14. J. Orschulik, N. Hochhausen, M. Czaplik, D. Teichmann, S. Leonhardt, M. Walter, „Addition of internal electrodes is beneficial for focused bioimpedance in the lung", **Physiological Measurement**, 2018 (39), pp. 1-16, https://doi.org/10.1088/ 1361-6579/aaad45

15. J. Orschulik, D. Pokee, T. Menden, S. Leonhardt, M. Walter, "Three-dimensional pulmonary monitoring using focused electrical impedance measurements", **Journal of Electrical Bioimpedance**, 2018 (9), pp. 84 – 95, https://doi.org/10.2478/joeb-2018-0013

16. C. Barbosa Pereira, X. Yu, T. Goos, I. Reiss, T. Orlikowsky, K. Heimann, B. Venema, V. Blazek, S. Leonhardt, "Noncontact Monitoring of Respiratory Rate in Newborn Infants Using Thermal Imaging", **IEEE Transaction on Biomedical Engineering**, 2018, pp. 1-10, doi: 10.1109/TBME.2018.2866878.

17. C. Barbosa Pereira, M. Czaplik, V. Blazek, S. Leonhardt, D. Teichmann, "Monitoring of Cardiorespiratory Signals Using Thermal Imaging: A Pilot Study on Healthy Human Subjects", **Sensors**, 2018, pp. 1-18, doi:10.3390/s18051541

18. J. Rolink, P. Fonseca, X. Long, S. Leonhardt, "Improving Sleep/Wake Classification with recurrence quantification analysis features", **Biomedical Signal Processing and Control**, 2018, 49 (2019), pp. 78-86, https://doi.org/10.1016/j.bspc.2018.11.005.

19. D. Rüschen, S. Opitz, P. von Platen, L. Korn, S. Leonhardt, M. Walter, "Robust physiological control of rotary blood pumps for heart failure therapy", **at-Automatisierungstechnik**, 2018, 66(9), pp 767-779, https://doi.org/10.1515/auto-2018-0014.

20. S. Aguiar Santos, M. Czaplik, J. Orschulik, N. Hochhausen, „Lung Pathologies analyzed with multi-frequency electrical impedance tomography: Pilot animal study", **Respiratory Physiology & Neurobiology**, 2018, 254, pp. 1-9, https://doi.org/10.1016/j.resp.2018.03.016.

21. T. Vahlsing, S. Delbeck, S. Leonhardt, H.M. Heise, " Noninvasive Monitoring of Blood Glucose Using Color-Coded Photoplethysmographic Images of the Illuminated Fingertip within the Visible and Near-infrared Range: Opportunities and Questions", Journal of Diabetes and Technology, 2018, pp. 1-9, https://doi.org/10.1177/1932296818798347.

Submitted:

1. V. Blazek, B. Venema, S. Leonardt, P. Blazek, „Customized optoeletronic in-ear-sensor strategy for unobtrusive continuous monitoring of cardiorespiratory vital signs", IJIEM Nov. 2018.

2. X. Yu, W. Neu, P. Vetter, C. Bollheimer. S. Leonhardt, "A multi- Modal Sensor for a Bed-Integrated Non-Contact Vital Signs Sensing Array", Transactions on Biomedical Circuits and Systems, Nov. 2018.

3. C. Castelar, F. Flürenbrock, L. Korn, A. Benninghaus, B. Misgeld, S. Shchukin, K. Radermacher, S. Leonhardt, "FEM simulation of bioimpedance-based monitoring of ventricular dilation and intracranial pulsation", International Journal of Bioelectromagnetism, Dec. 2018

4. Menden, T., Orschulik, J., Dambrun, S., Matuszczyk, J., Santos, S. A., Leonhardt, S., Walter, M. (2019). Reconstruction Algorithm for Frequency-Differential EIT using Absolute Values. Physiol. Meas., Nov 2018

5. A. Pomprapa, W. Ahmed, A. Stollenwerk, S. Kowalewski, S. Leonhardt. „Deep Learning of Arrhythmia Analysis based on Convolutional Neural Network", International Journal of Bioelectromagnetism, Dec. 2018.

Konferenzbeiträge mit Beteiligung
des Lehrstuhls 2018 /
Conference Proceedings 2018

52. Regelungstechnisches Kolloquium, Boppard, Germany, February 21–23, 2018

1. D. Rüschen, M. Walter, S. Leonhardt, " Robuste physiologische Regelung von Herzunterstützungssystement", 52. Regelungstechnisches Kolloquium, Boppard, Germany, February 21–23, 2018

Automatisierungstechnische Verfahren für die Medizin (AUTOMED 2018), Villingen-Schwenningen, Germany, March 15-16 2018

2. A. Pomprapa, P. Pickerodt, D. Schwaiberger, O. Tjarks, P. von Platen, W. Braun, R.C.E. Francis, B. Lachmann, S. Leonhardt, "Automatic control of ventilation therapy in acute respiratory distress syndrome based on open lung management", Automatisierungstechnische Verfahren für die Medizin (AUTOMED 2018), Villingen-Schwenningen, March 15-16, 2018.

3. D. Rüschen, S. Opitz, P. von Platen, L. Korn, S. Leonhardt, and M. Walter, " Robuste physiologische Herzunterstützung mit rotatorischen Blutpumpen", Automatisierungstechnische Verfahren für die Medizin (AUTOMED 2018), Villingen-Schwenningen, March 15-16, 2018.

2018 Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBEREIT), Yekaterinburg, Russia, May 7-8, 2018

4. D. Petukhov, D. Telyshev, M. Walter, L. Korn, " An algorithm of system identification for implantable rotary blood pumps",2018 Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBEREIT), Yekaterinburg, Russia, May 7 – 8, 2018

5. D. Telyshev, A. Pugovkin, S. Selishchev, D. Rüschen, S. Leonhardt, "Hybrid Mock Circulatory Loop for Training and Study Purposes ",2018 Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBEREIT), Yekaterinburg, Russia, May 7 – 8, 2018

Deutscher Anästhesiecongress (DAC) 2018, Nürnberg, Germany, April 25 – 27, 2018

6. T. Muders, B. Hentze, S. Leonhardt, G. Hedenstierna, H. Wrigge, C. Putensen, "Quantitative Bestimmung der regionalen Lungenperfusion mittels EIT und SPECT", Deutscher Anästhesiecongress 2018, Nürnberg, Germany, April 25 – 27, 2018.

American Thoracic Society 2018 International Conference (ATS), San Diego, CA, USA, May 18-23, 2018

7. A. Pomprapa, W. Ahmed, M.S. Sayani, A. Stollenwerk, S. Kowaleswki, S. Leonhardt, "Classification of Obstructive Sleep Apnea Using Machine Learning", American Thoracic Society 2018 International Conference (ATS), San Diego, CA, USA, May 18-23, 2018.

8. A. Pomprapa, T. Menden, M. Lüken, H. Ivanov, J.P. Batista, C. Bollheimer, S. Leonhardt, "Surface Electromyogram Analysis of Spontaneous Breathing", American Thoracic Society 2018 International Conference (ATS), San Diego, CA, USA, May 18-23, 2018.

11th International Conference on Bioelectromagnetism, ICBEM, Aachen, Germany, May 23 -25, 2018

9. A. H. Ismail, C. Castelar, S. Leonhardt, "Are Thigh and Calf Bioimpedance Spectroscopy less Susceptible to the Influence of Body Posture during Continous Applications?", 11th International Conference on Bioelectromagnetism, Aachen, Germany, May 23 -25, 2018

10. A. Pomprapa, W. Ahmed, A. Stollenwerk, S. Kowalewski, D.U. Uguz, S. Leonhardt, "Arrhythmia Analysis in a non-contact cECG chair using Convolutional Neural Network", 11th International Conference on Bioelectromagnetism, Aachen, Germany, May 23 -25, 2018

11. T. Menden, J. Orschulik, M. Slimi, S. Leonhardt, M. Walter, "Development of an Electrical Phantom for Multi-Frequency Electrical Impedance Tomography based on the Visible Human", 11th International Conference on Bioelectromagnetism, Aachen, Germany, May 23 -25, 2018

12. J. Orschulik, N. Hochhausen, S. Aguiar Santos, M. Czaplik, S. Leonhardt, M. Walter, "Detection of Acute Respiratory Distress Syndrome using Sectoral Bioimpedance Spectroscopy – a Pilot", 11th International Conference on Bioelectromagnetism, Aachen, Germany, May 23 -25, 2018

13. X. Yu, W. Neu, P. Vetter, C. Bollheimer, S. Leonhardt, D. Teichmann, "Inter-modal and Intra-modal Interference in a Multi-Modal Sensor for Non-contact Monitoring of Vial Signs in Patient Beds", 11th International Conference on Bioelectromagnetism, Aachen, Germany, May 23 -25, 2018

13th Russian German Conference on Biomedical Engineering, RGC, Aachen, Germany, May 23 -25, 2018

14. A. Pomprapa, M.S. Sayani, T. Anwar, A. Stollenwerk, S. Kowalewski, P. von Platen, S. Leonhardt, "Apnea Detection in a Contactless Multisensor System using Deep Learning Algorithm",13th Russian German Conference on Biomedical Engineering, RGC, Aachen, Germany, May 23 -25, 2018.

World Congress on Medical Physics and Biomedical Engineering 2018, Prague, Czech Republic June, 03 – 08, 2018

15. J. Kühn, M. Buglowski, A. Stollenwerk, S. Kowalewski, M. Walter, S. Leonhardt, J. Petran, R. Kopp, R. Rossaint, T. Janisch, "Fault Identification in a Blood Pump using Neural Networks ",World Congress on Medical Physics and Biomedical Engineering 2018, Prague, Czech Republic, June 3-8, 2018.

16. P. von Platen, D. Rüschen, S. Leonhardt, M. Walter, "Assistance Ratio: An Approach to Quantify the Hydraulic Load Distribution in LVAD Therapy", World Congress on Medical Physics and Biomedical Engineering 2018, Prague, Czech Republic, June 3-8, 2018.

17. U. Uguz, B. Venema, S. Leonhardt, D. Teichmann, "Multifunctional Photoplethysmography Sensor Design for Respiratory and Cardiovascular Diagnosis", World Congress on Medical Physics and Biomedical Engineering 2018, Prague, Czech Republic, June 3-8, 2018.

18. M. Walter, J. Kühn, T. Janisch, J. Petran, R. Kopp, S. Leonhard, "Cooperative automation of extracorporeal gas exchange and artificial ventilation", World Congress on Medical Physics and Biomedical Engineering 2018, Prague, Czech Republic, June 3-8, 2018.

44. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin, Rostock, Germany, June 7 – 9, 2018

19. S. Walter, M. Paul, C. Pereira , D. Teichmann, S. Behr, S. Leonhardt, T. Orlikowsky, K. Heimann. „Faziale Infrarotthermographie (FIRT) zur Erfassung des Temperatur-verhaltens Früh- und Neugeborener mit und ohne Stress", 44. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin (GNPI), Rostock, June 7 – 9, 2018

20. K. Heimann, S. Behr, M. Paul, D. Teichmann, C. Pereira, S. Leonhardt, T. Orlikowsky. „Photoplethysmographie Imaging (PPGI) als kontaktlose Messmethode zur funktionellen Erfassung der lokalen Hämodynamik für das Pulsoxymetrie Imaging (POI) des Frühgeborenen?", 44. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin (GNPI), Rostock, June 7 – 9, 2018

19th International Conference On Biomedical Applications of Electrical Impedance Tomography, Edinburgh, Scotland, UK, EIT 2018, June 11 – 13, 2018

21. B. Hentze, T. Muders, C. Putensen, S. Leonhardt, M. Walter, "Towards Regional Lung Ventilation to Perfusion Ratio by EIT",19th International Conference on Biomedical Applications of Electrical Impedance Tomography, Edinburgh, Scotland, UK, EIT 2018, June 11 – 13, 2018.

22. T. Menden, J. Orschulik, K. Sajamark, S. Dambrun, S. Aguiar Santos, M. Walter S. Leonhardt, " Frequency-Differential Reconstruction Algorithm for Thoracic EIT Using Absolute Values",19th International Conference on Biomedical Applications of Electrical Impedance Tomography, Edinburgh, Scotland, UK, EIT 2018, June 11 – 13, 2018.

40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, Hawai, USA, July 18 - 21, 2018

23. S. Leonhardt, D. Teichmann "Fusing non-contact vital sign sensing modalities – first result", 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, Hawaii, USA, July 18 - 21, 2018.

24. X. Yu, M. Paul, C. Hoog Antink, B. Venema, V. Blazek, C. Bollheimer, S. Leonhardt, D. Teichmann, "Non-Contact Remote Measurement of Heart Rate Variability using Near-Infrared Photoplethysmography Imaging", 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, Hawaii, USA, July 18 - 21, 2018.

25. C. Hoog Antink, S. Leonhardt, M. Walter, "Local Interval Estimation Improves Accuracy and Robustness of Heart Rate Variability Derivation from Photoplethysmography ",40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, Hawaii, USA, July 18 - 21, 2018.

26. F. Berief, S. Leonhardt, C. Hoog Antink, Modelling and Sythesizing Motion Artefacts in Unobtrusive Multimodal Sensing using Copulas",40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, Hawaii, USA, July 18 - 21, 2018.

10th IFAC Symposium on Biological and Medical Systems BMS 2018, São Paulo, Brazil, 3–5 September 2018

27. B. J.E. Misgeld, A Schneuing, S. Leonhardt, "Selection of glucose metabolism models with an observer error metric" 10th IFAC Symposium on Biological and Medical Systems BMS 2018, Sao Paulo Brazil, September 3 - 5, 2018

28. C. Ngo, F. Dippel, S. Lehmann, K. Tenbrock, T. Vollmer, B. J.E. Misgeld, S. Leonhardt, "The volume-dependent Forced Oscillation Technique" 10th IFAC Symposium on Biological and Medical Systems BMS 2018, Sao Paulo Brazil, September 3 - 5, 2018

45th Annual Congress of the European Society for Artificial Organs (ESAO), Madrid, Spain, September 12 – 15, 2018

29. L. Korn, J.H. Winkler, D. Rüschen, S. Leonhardt, M. Walter, "4D FEM Study of Disturbances on the Conductance Catheter Method",45th Annual Congress of the European Society for Artificial Organs (ESAO), Madrid, Spain, September 12 – 15, 2018.

8th International Conference on Mass Customization and Personalization – Community of Europa (MCP – CE 2018), Novi Sad, Serbia, September, 19 -21, 2018

30. V. Blazek, B. Venema, S. Leonhardt, P. Blazek, "Nonobtrusive Monitoring of Cardio-Vascular Functions with a novel customized in-ear-sensor strategy" Novi Sad, Serbia, September, 19 -21, 2018.

Computing in Cardiology (CinC 2018), Maastricht, Netherlands, September 23 – 26, 2018

31. C. Hoog Antink, E. Breuer, D.U. Uguz,S. Leonhardt, "Signal-Level Fusion with Convolution Neural networks for Capacitively Coupled ECG in the Car", Computing in Cardiology (CinC 2018), Maastricht, Netherlands, September 23 – 26, 2018.

11th International Workshop on Impedance Spectroscopy – IWIS 2018, Chemnitz, Germany, Spetember 25 – 28, 2018

32. S. Dahlmanns, L. Geller-Hartung, S. Leonhardt, D.Teichmann, "3 D Bioimpedance Model of the Human Lower Leg" Chemnitz, Germany, September 25 -28, 2018.

52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018

33. C. Hoog Antink, X. Yu, M. Paul, S. Leonhardt, "From infants to elders: challenges in multi-spectral multi-camera setups for vital sign estimation", 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018. Aachen, Germany, September 25 -28, 2018.

34. L. Korn, S. Lyra, D. Rüschen, A. Pugovkin, D. Telyshev, S. Leonhardt, M. Walter, "Heart phantom with electrical properties of heart muscle tissue", 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018.

35. B. Penzlin, J. Nienhaus, J.P. Batista, L.C. Bollheimer, S. Leonhardt, "Determination of spatiotemporal gait parameters from different sensor configurations", 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018

36. A. Pomprapa, M. S. Sayani, W. Ahmed, S. Leonhardt, "Automatic Detection and Classification of Cardiopulmonary Diseases using Deep Structured Learning", 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018.

37. A. Pomprapa, L. Liu, S. Leonhardt, "Design of Nonlinear Impedance Controller for Lower Extremity Exoskeleton with Variable Stiffness Actuator", 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018.

38. S. Stürmer, A. Benninghaus, S, Leonhardt, K. Radermacher, "Design and Evaluation of a Mechanism Modelling CSF Resorption for In-Vitro Simulation, 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018.

39. S. Leonhardt, R. Kopp, M. Walter, "From animal model to hardware in the loop simulation - a new research and development approach, 52nd DGBMT Annual Conference, Aachen, Germany, September 26 – 28, 2018.

Hydrocephalus 2018, the Tenth Annual Meeting of the International Society for Hydrocephalus and CSF disorders (Hydrocephalus Society), Bologna, Italy, October 19 – 22, 2018

40. A. Benninghaus, A. Lokossu, Olivier Balédent, S. Leonhardt, K. Radermacher, "Impact of the cranial and spinal compliance on CSF hydrodynamics regarding normal pressure hydrocephalus", Hydrocephalus 2018, October 19 – 22, 2018, Bologna, Italy, https://doi.org/10.1186/s12987-018-0119-0.

41. C. Castelar, F. Flürenbrock, A. Benninghaus, K. Radermacher, S. Leonhardt, „Test-bench setup for bioimpedance-based monitoring of ventricular dilation", Hydrocephalus 2018, October 19 – 22, 2018, Bologna, Italy, https://doi.org/10.1186/s12987-018-0119-0.

Eingeladene Vorträge 2018 /
Invited Talks and Lectures 2018

[1] S. Leonhardt, „*Methoden zum kontakt- und kabelfreien Monitoring*", Bremer Symposium Intensivmedizin und Intensivpflege, Bremen, 14. Feb. 2018.

[2] S. Leonhardt, "*Body Sensor Networks - components, devices and services*", Healthcare Information and Management System Society Global Conference & Exhibition (HIMSS 18), Las Vegas, USA, March 5-9, 2018.

[3] S. Leonhardt, "*Thou shalt not touch … - Nonobtrusive and Noncontact Monitoring Techniques for Medical Applications*", Invited lecture, U of Michigan, Ann Arbor, MI, USA, March 9th, 2018.

[4] S. Leonhardt, "*Feedback Control in Medicine*", Invited lecture, U of Michigan, Ann Arbor, MI, USA, March 9th, 2018.

[5] S. Leonhardt, "*Camera-based Physiological Measurements*", 1st International *Workshop on Computer Vision for Physiological Measurement* (CVPM) at the *Computer Vision and Pattern Recognition Conference* (IEEE CVPR '18), Keynote lecture, June 22nd, 2018.

[6] S. Leonhardt, "*Fusing non-contact vital sign sensing modalities - first results*", 40th International Engineering in Medicine and Biology Conference, Honolulu, Hawaii, USA, July 17-21, 2018.

[7] S. Leonhardt, R. Kopp and M. Walter, "*From animal model to hardware in the loop simulation - a new research and development approach*", DGBMT 2018 - 52. Jahrestagung der DGBMT (Deutsche Gesellschaft für Biomedizinische Technik im VDE Aachen), Aachen, 26. - 28. September 2018.

[8] S. Leonhardt, "*Thou shalt not touch … - Nonobtrusive and Noncontact Monitoring Techniques for Medical Applications*", Invited lecture, Institut für Bioprozess- und Analysenmesstechnik e.V. (iba), D-37308 Heilbad Heiligenstadt, Oct. 30th, 2018.

[9] S. Leonhardt, "**Pflegeerleichterung durch kontaktfreie Messtechnik für liegende Bewohner**", Pflegetage 2018 - Digitalisierung in der Pflege, Fa. Wissner-Bosserhoff, Science-Center, Berlin, 11. 09. 2019.

[10] S. Leonhardt, "**Pflegeerleichterung durch kontaktfreie Messtechnik für liegende Bewohner**", Pflegetage 2018 - Digitalisierung in der Pflege, Fa. Wissner-Bosserhoff, Pe303, Köln, 21.09.2019.

[11] S. Leonhardt, „*Camera-based Physiological Measurements*", BIG BRAIN 2018, TRYP Düsseldorf, Krefeld, Germany, 10. – 12. December 2018.

Organisation von eingeladenen Zeitschriften-Ausgaben im Jahr 2018
Organisation of invited special issues in peer-reviewed journals in 2018

1. „**Sonderheft 80. Geburtstag Rolf Isermann**. Editorial: S. Leonhardt, O. Nelles, at-Automatisierungstechnik, 2018, 66(9), pp 688-689, https://doi.org/10.1515/auto-2018-0087