DCPM Publication List:

Organisation: Publications are organised by research area of the three Work Packages (WPs) consisting of:

- **WP1 - GC**: Glycaemic Control for Insulin Insufficient Individuals

- **WP2 - CVS**: Next-Generation Cardiovascular System Monitoring and Management

- **WP3 - MV**: Virtual Patient Model of the Human Lung

Each Work Packages (WPs) has its own listing and each listing is broken into journal and conference publications. These sections commence on the following pages in the order above.

All articles are in collaborative work and/or involve researchers who were on or were exchanged via this grant and are organised by WPs. They all were published starting in 2020 onward from the commencement of DCPM.

WP1 - GC: Glycaemic Control for Insulin Insufficient Individuals

Journal Articles: 1 total; (0 invited)

1. Yahia, A., Szlávecz, Á., Knopp, J. L., Norfiza Abdul Razak, N., Abu Samah, A., Shaw, G., ... & Benyo, B. (2022). Estimating enhanced endogenous glucose production in intensive care unit patients with severe insulin resistance. *Journal of diabetes science and technology*, *16*(5), 1208-1219.

Conference Articles: 6 total; (2 invited)

1. Benyó, B., Paláncz, B., Szlávecz, Á., Szabó, B., Anane, Y., Kovács, K. and Chase, J., G. (2020) "Artificial Intelligence Based Insulin Sensitivity Prediction for Personalized Glycaemic Control in Intensive Care", 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, 6-pages, (**invited**), *IFAC-PapersOnLine*, *53*(2), 16335-16340
2. Anane, Y., Chase, J., G., and Benyo, B. (2020) "Clinical application scenarios to handle insulin resistance and high endogenous glucose production for intensive care patients", 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, 6-pages, (**invited**), *IFAC-PapersOnLine*, *53*(2), 16299-16304
3. B. Szabó, G. Chase and B. Benyó, "Higher Dimensional Insulin Sensitivity Prediction in Intensive Care," 2021 IEEE 25th International Conference on Intelligent Engineering Systems (INES), Budapest, Hungary, 2021, pp. 000151-000158, doi: 10.1109/INES52918.2021.9512911.
4. B. Szabo, A. Szlavecz, K. Kovacs, B. Palancz, G. Chase and B. Benyo, "Increasing Patient Specificity of the Recurrent Neural Network Based Insulin Sensitivity Prediction by Transfer Learning," *2022 IEEE 26th International Conference on Intelligent Engineering Systems (INES)*, Georgioupolis Chania, Greece, 2022, pp. 000027-000032, doi: 10.1109/INES56734.2022.9922645.
5. Szabo, B., Szlavecz, A., Paláncz, B., Benyo, B., & Chase, G. (2021). In-silico simulation based evaluation of insulin prediction method for personalized medical treatment. In: Kiss, Bálint; Szirmay-Kalos, László (eds.) Proceedings of the Workshop on the Advances of Information Technology (WAIT) 2021, Bp, Hungary : BME Irányítástechnika és Informatika Tanszék (2021) p. 145 , 10 p.
6. Szabo, B., Szlavecz, A., Paláncz, B., Benyo, B., & Chase, G. (2021). In-silico simulation based evaluation of insulin prediction method for personalized medical treatment. In: Vassányi, István; Fogarassyné, Vathy Ágnes (eds.) Orvosi informatika. A XXXIV. Neumann Kollokvium konferencia-kiadványa, Veszprém, Hungary : NJSZT (2021) pp. 88-94. , 7 p.

WP2 - CVS: Next-Generation Cardiovascular System Monitoring and Management

Journal Articles: 0 total; (0 invited)

1.

Conference Articles: 2 total; (1 invited)

1. Nagy, R., Umenhoffer, T., Somogyi, P., Szlavecz, Á., Kubovje A., Laufer B., Kovács, K. Szerafin, T. and Benyo, B. (2020) "Finite Element Simulation Based Analysis of Valve-sparing Aortic Root Surgery", 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, 6-pages, (**invited**), *IFAC-PapersOnLine*, *53*(2), 16037-16042.
2. Smith, R., Balmer, J., Pretty, C. G., Shaw, G. M., & Chase, J. G. (2020). Clinical application of a model-based cardiac stroke volume estimation method, 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, *IFAC-PapersOnLine*, *53*(2), 16137-16142.
3.

WP3 - MV: Virtual Patient Model of the Human Lung

Journal Articles: 24 total; (0 invited)

1. Laufer, B., Murray, R., Docherty, P. D., Krueger-Ziolek, S., Hoeflinger, F., Reindl, L., & Moeller, K. (2020). A Minimal Set of Sensors in a Smart-Shirt to Obtain Respiratory Parameters. IFAC-PapersOnLine, 53(2), 16293-16298.
2. Morton, S. E., Knopp, J. L., Tawhai, M. H., Docherty, P., Heines, S. J., Bergmans, D. C., ... & Chase, J. G. (2020). Prediction of lung mechanics throughout recruitment maneuvers in pressure-controlled ventilation. Computer Methods and Programs in Biomedicine, 197, 105696.
3. B. Laufer et al., 'Optimal Sensor Location in a Smart-Shirt to Measure Accurate Tidal Volumes During Abdominal and Thoracic Respiration', Curr. Dir. Biomed. Eng., vol. 7, no. 2, Art. no. 2, Oct. 2021, doi: 10.1515/cdbme-2021-2146.
4. S. Krueger-Ziolek, A. Lovas, F. Hawchar, B. Laufer, and K. Moeller, 'EIT based intrathoracic pulsatile impedance measurements during apnea: a case study', Curr. Dir. Biomed. Eng., vol. 6, no. 3, Art. no. 3, Sep. 2020, doi: 10.1515/cdbme-2020-3014.
5. H.-J. Hsu et al., 'Positive end-expiratory pressure titration with electrical impedance tomography and pressure–volume curve: a randomized trial in moderate to severe ARDS', Physiol. Meas., vol. 42, no. 1, Art. no. 1, Jan. 2021, doi: 10.1088/1361-6579/abd679.
6. R. Chen and K. Moeller, 'Detection of Outdated Structural Priors in the Discrete Cosine Transformation-based Electrical Impedance Tomography Algorithm', Curr. Dir. Biomed. Eng., vol. 7, no. 2, Art. no. 2, Oct. 2021, doi: 10.1515/cdbme-2021-2172.
7. I. I. Reinoso, R. Chen, A. Lovas, and K. Moeller, 'Long term EIT based compliance monitoring in COVID-19 patients', Curr. Dir. Biomed. Eng., vol. 7, no. 2, Art. no. 2, Oct. 2021, doi: 10.1515/cdbme-2021-2082.
8. L. Yang et al., 'Lung regions identified with CT improve the value of global inhomogeneity index measured with electrical impedance tomography', Quant. Imaging Med. Surg., vol. 11, no. 4, Art. no. 4, Apr. 2021, doi: 10.21037/qims-20-682.
9. H. He et al., 'Bedside Evaluation of Pulmonary Embolism by Saline Contrast Electrical Impedance Tomography Method: A Prospective Observational Study', Am. J. Respir. Crit. Care Med., vol. 202, no. 10, Art. no. 10, Nov. 2020, doi: 10.1164/rccm.202005-1780le.
10. S. Beck, B. Laufer, and K. Moeller, 'Comparison of Geometrical Lung Models to Calculate Tidal Volumes during Spontaneous Breathing', Curr. Dir. Biomed. Eng., vol. 7, no. 2, Art. no. 2, Oct. 2021, doi: 10.1515/cdbme-2021-2209.
11. R. Chen, A. Lovas, B. Benyó, and K. Moeller, 'Electrical Impedance Tomography might be a Practical Tool to Provide Information about COVID-19 Pneumonia Progression', Curr. Dir. Biomed. Eng., vol. 7, no. 2, Art. no. 2, Oct. 2021, doi: 10.1515/cdbme-2021-2070.
12. T. Abdulbaki Alshirbaji, N. A. Jalal, P. D. Docherty, T. Neumuth, and K. Möller, 'A deep learning spatial-temporal framework for detecting surgical tools in laparoscopic videos', Biomed. Signal Process. Control, vol. 68, p. 102801, Jul. 2021, doi: 10.1016/j.bspc.2021.102801.
13. R. Chen and K. Möller, 'Global Inhomogeneity Index Evaluation of a DCT-based EIT Lung Imaging', Curr. Dir. Biomed. Eng., vol. 6, no. 3, Art. no. 3, Sep. 2020, doi: 10.1515/cdbme-2020-3010.
14. L. Sang, Z. Zhao, Z. Lin, X. Liu, N. Zhong, and Y. Li, 'A narrative review of electrical impedance tomography in lung diseases with flow limitation and hyperinflation: methodologies and applications', Ann. Transl. Med., vol. 8, no. 24, Art. no. 24, Dec. 2020, doi: 10.21037/atm-20-4984.
15. H. He et al., 'Influence of overdistension/recruitment induced by high positive end-expiratory pressure on ventilation–perfusion matching assessed by electrical impedance tomography with saline bolus', Crit. Care, vol. 24, no. 1, Art. no. 1, Sep. 2020, doi: 10.1186/s13054-020-03301-x.
16. L. Yang et al., 'Regional ventilation distribution in healthy lungs: can reference values be established for electrical impedance tomography parameters?', Ann. Transl. Med., vol. 9, no. 9, Art. no. 9, May 2021, doi: 10.21037/atm-20-7442.
17. A. Lovas et al., 'Differentiating Phenotypes of Coronavirus Disease-2019 Pneumonia by Electric Impedance Tomography', Front. Med., vol. 9, 2022, doi: 10.3389/fmed.2022.747570
18. L. Sang et al., 'Qualitative and quantitative assessment of pendelluft: a simple method based on electrical impedance tomography', Ann. Transl. Med., vol. 8, no. 19, Art. no. 19, Oct. 2020, doi: 10.21037/atm-20-4182.
19. B. Laufer, S. Krueger-Ziolek, K. Moeller, P. D. Docherty, F. Hoeflinger, and L. Reindl, 'An

alternative way to measure total lung capacity: a pilot study', Curr. Dir. Biomed. Eng., vol. 6, no. 3, Art. no. 3, Sep. 2020, doi: 10.1515/cdbme-2020-3061.

20. R. Chen, A. Lovas, B. Benyó, and K. Moeller, 'COVID-19 Pneumonia Phenotypes Detection with Electrical Impedance Tomography', Curr. Dir. Biomed. Eng., vol. 8, no. 2, pp. 707–710, Aug. 2022, doi: 10.1515/cdbme-2022-1180.

21. E. Stein, R. Chen, A. Battistel, and K. Moeller, 'Separating Respiration and Perfusion in EIT: Harmonic Analysis on 2D-Thorax Simulation', Curr. Dir. Biomed. Eng., vol. 8, no. 2, pp. 785–788, Aug. 2022, doi: 10.1515/cdbme-2022-1200.

22. C. Zhou et al., 'Reconstructing asynchrony for mechanical ventilation using a hysteresis loop virtual patient model', Biomed. Eng. OnLine, vol. 21, no. 1, Art. no. 1, Dec. 2022, doi: 10.1186/s12938-022-00986-9.

23. B. Laufer et al., 'Tiffeneau-Testing by means of a Smart-Shirt', Curr. Dir. Biomed. Eng., vol. 8, no. 2, pp. 616–619, Aug. 2022, doi: 10.1515/cdbme-2022-1157.

24. Q. Sun et al., 'Non-invasive over-distension measurements: data driven vs model-based', J. Clin. Monit. Comput., Aug. 2022, doi: 10.1007/s10877-022-00900-7.

Conference Articles: 13 total; (0 invited, 0 invited plenary)

1. Kim, K. T., Knopp, J., Dixon, B., & Chase, J. G. (2020). Comparison between single compartment model and recruitment basis function model on NICU patients, 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, IFAC-PapersOnLine, 53(2), 16185-16190.

2. Kim, K. T., Knopp, J., Dixon, B., & Chase, J. G. (2020). Physiological sex differences in mechanically ventilated premature neonates: A pilot study, 21st IFAC World Congress 2020, July 11-17, Berlin, Germany, IFAC-PapersOnLine, 53(2), 16173-16178.

3. R. Chen, A. Lovas, S. Krüger-Ziolek, B. Benyó, and K. Möller, 'EIT based time constant analysis to determine different types of patients in COVID-19 pneumonia', in 8th european medical and biological engineering conference, Springer International Publishing, 2020, pp. 462–469. doi: 10.1007/978-3-030-64610-3_52.

4. S. L. Howe et al., 'Non-invasive measurement of tidal breathing lung mechanics using expiratory occlusion', IFAC-Pap., vol. 53, no. 2, Art. no. 2, Jan. 2020, doi: 10.1016/j.ifacol.2020.12.606.

5. S. L. Howe et al., 'Effect of small airways and viscoelasticity on lung mechanics from expiratory occlusion', IFAC-Pap., vol. 53, no. 2, Art. no. 2, 2020, doi: 10.1016/j.ifacol.2020.12.620.

6. R. Chen, A. Lovas, B. Benyo, and K. Möller, 'Detection of Different COVID-19 Pneumonia Phenotypes with Bedside Electrical Impedance Tomography', in 21st International Conference on Biomedical Applications of Electrical Impendance Tomography (EIT 2021), Galway, Ireland, 2021, p. 1. doi: 10.5281/zenodo.4940249.

7. R. Chen, A. Lovas, B. Benyó, and K. Möller, 'Detection of Different COVID-19 Pneumonia Phenotypes with Estimated Alveolar Collapse and Overdistention by Bedside Electrical Impedance Tomography', IFAC-Pap., vol. 54, no. 15, Art. no. 15, Jan. 2021, doi: 10.1016/j.ifacol.2021.10.267.

8. R. Chen and K. Moeller, 'Redistribution index – detection of an outdated prior information in the discrete cosine transformation-based EIT algorithm', in 2021 43rd annual international conference of the IEEE engineering in medicine & biology society (EMBC), Nov. 2021. doi: 10.1109/embc46164.2021.9630567.

9. B. Laufer, S. Krueger-Ziolek, P. D. Docherty, F. Hoeflinger, L. Reindl, and K. Moeller, 'An Alternative Way to Measure Tidal Volumes', presented at the 8th European Medical and Biological Engineering Conference, Portorož, Slovenia, 2021, pp. 66–72. doi: 10.1007/978-3-030-64610-3_9.

10. R. Chen, A. Lovas, B. Benyó, and K. Möller, 'The effect of different priors on a discrete cosine transformation based EIT algorithm', in 15th Interdisciplinary Symposium Automation in Medical Engineering (AUTOMED), Basel, Switzerland, Jun. 2021. doi: 10.5281/zenodo.4922803.

11. Chen, S. J. Rupitsch, and K. Moeller, 'Influence of hyperparameter on the Untrue Prior Detection in Discrete Transformation-based EIT Algorithm', in 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Jul. 2022, pp. 580–583. doi: 10.1109/EMBC48229.2022.9871293.

12. B. Laufer, P. D. Docherty, S. Krüger-Ziolek, F. Höflinger, L. Reindl, and K. Möller, 'Analysis of

Respiration Induced Movements of the Upper Body in Different Breathing Patterns', presented at the 15th Interdisciplinary Symposium Automation in Medical Engineering (AUTOMED), Basel, Switzerland, 2021, p. 2. doi: 10.5281/zenodo.4925873.

13. B. Laufer, S. Krueger-Ziolek, P. D. Docherty, F. Hoeflinger, L. Reindl, and K. Moeller, 'An alternative way to measure respiration induced changes of circumferences: a pilot study', presented at the 42nd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC), Montreal, QC, Canada, Jul. 2020, pp. 4632–4635. doi: 10.1109/EMBC44109.2020.9175578.

14.