Peter Charlton
Publication List

Journal Articles

Preprints (currently under review)

i. S. Y. Ho, Z. Ding, D. C. Wong, F. Kristof, J. Brimicombe, M. R. Cowie, A. Dymond, H. C. Clair Linden, G. Y. Lip, K. Williams, J. Mant, and **P.H. Charlton**. Accurate RR-interval extraction from single-lead, telehealth electrocardiogram signals. *medRxiv*, 2025

ii. **P. H. Charlton**, V. Marozas, E. Mejia-Mejia, P. Kyriacou, and J. Mant. Determinants of photoplethysmography signal quality at the wrist. *TechRxiv*, 2024. URL https://doi.org/10.36227/techrxiv.172954491.17588920/v1

iii. M. Moulaeifard, L. Coquelin, M. Rinkevičius, A. Sološenko, O. Pfeffer, C. Bench, N. Hegemann, S. Vardanega, M. Nandi, J. Alastruey, C. Heiss, V. Marozas, A. Thompson, P. J. Aston, **P. H. Charlton**, and N. Strodthoff. Machine-learning for photoplethysmography analysis: Benchmarking feature, image, and signal-based approaches. *arXiv*, 2025. URL https://doi.org/10.48550/arXiv.2502.19949

iv. M. Moulaeifard, **P. H. Charlton**, and N. Strodthoff. Generalizable deep learning for photoplethysmography-based blood pressure estimation – a benchmarking study. *arXiv*, 2025. URL https://doi.org/10.48550/arXiv.2502.19167

v. V. Penmetcha, L. Rambabu, B. Smith, O. Mantle, T. Edmiston, L. Hobbs, S. Nagraj, **P. H. Charlton**, and T. Bashford. Evaluating diversity in open photoplethysmography (ppg) datasets: a protocol for systematic review. 2025. URL http://doi.org/10.2196/preprints.73040

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1. **P. H. Charlton**, E. J. Arguello-Prada, J. Mant, and P. Kyriacou. The MSPTDfast photoplethysmography beat detection algorithm: design, benchmarking, and open-source distribution. *Physiological Measurement*, 46:035002, 2025. URL https://doi.org/10.1088/1361-6579/adb89e

2. A. Sen, M. Aguirre, **P. H. Charlton**, L. Navarro, S. Avril, and J. Alastruey. Machine learning-based pulse wave analysis for classification of circle of willis topology: an in silico study with 30,618 virtual subjects. *Biomedical Signal Processing and Control*, 100:106999, 2025. URL https://doi.org/10.1016/j.bspc.2024.106999

2024

3. K. P. Bhayankaram, J. Mant, J. Brimicombe, A. Dymond, K. Williams, and **P. H. Charlton**. Telephone training to improve ECG quality in remote screening for atrial fibrillation. *Physiological Measurement*, 45:125005, 2024. URL https://doi.org/10.1088/1361-6579/ad9798

4. S. Zanelli, D. Agnoletti, J. Alastruey, J. Allen, E. Bianchini, V. Bikia, P. Boutouyrie, R. M. Bruno, R. Climie, D. Djamaleddine, E. Gkaliagkousi, A. Giudici, K. Gopcevic, A. Grillo, A. Guala, B. Hametner, J. Joseph, P. Karimpour, V. Kodithuwakku, P. A. Kyriacou, A. Lazaridis, M. T. Lonnebakken, M. R. Martina, P. M. Mayer, C C Nabeel, P. Navickas, J. Nemcsik, S. Orter, C. Park, T. Pereira, G. Pucci, A. B. A. Rey, P. Salvi, A. C. G. Seabra, U. Seeland, T. van Sloten, B. Spronck, G. Stansby, I. Steens,

T. Stieglitz, I. Tan, D. Veerasingam, S. Wassertheurer, T. Weber, B. E. Westerhof, and **P. H. Charlton**. Developing technologies to assess vascular ageing: a roadmap from VascAgeNet. *Physiological Measurement*, 45:121001, 2024. URL https://doi.org/10.1088/1361-6579/ad548e

5. K. Kario, B. Williams, N. Tomitani, R. J. McManus, A. E. Schutte, A. Avolio, D. Shimbo, J.-G. Wang, N. A. Khan, D. S. Picone, I. Tan, **P. H. Charlton**, M. Satoh, K. N. Mmopi, J. P. Lopez-Lopez, T. L. Bothe, E. Bianchini, B. Bhandari, J. Lopez-Rivera, F. J. Charchar, M. Tomaszewski, and G. Stergiou. Innovations in blood pressure measurement and reporting technology: International Society of Hypertension position paper endorsed by the World Hypertension League, European Society of Hypertension, Asian Pacific Society of Hypertension, and Latin American Society of Hypertension. *Journal of Hypertension*, 42(11):1874, Nov. 2024. URL https://doi.org/10.1097/HJH.0000000000003827

6. M. Rinkevicius, J. Lazaro, E. Gil, P. Laguna, **P. H. Charlton**, R. Bailon, and V. Marozas. Obstructive sleep apnea characterization: A multimodal cross-recurrence-based approach for investigating atrial fibrillation. *IEEE Journal of Biomedical and Health Informatics*, 28(10):6155–6167, 2024. URL https://doi.org/10.1109/JBHI.2024.3428845

7. F. Kristof, M. Kapsecker, L. Nissen, J. Brimicombe, M. Cowie, Z. Ding, A. Dymond, S. Jonas, H. C. Linden, G. Lip, K. Williams, J. Mant, and **P. H. Charlton**. QRS detection in single-lead, telehealth electrocardiogram signals: benchmarking open-source algorithms. *PLOS Digital Health*, 3(8):e0000538, 2024. URL https://doi.org/10.1371/journal.pdig.0000538

8. K. Hibbitt, J. Brimicombe, M. Cowie, A. Dymond, B. Freedman, S. J. Griffin, F. R. Hobbs, H. C. Linden, G. Lip, J. Mant, R. J. McManus, M. Pandiaraja, K. Williams, and **P. H. Charlton**. Reliability of single-lead electrocardiogram interpretation to detect atrial fibrillation: insights from the SAFER Feasibility Study. *EP Europace*, 26:euae181, 2024. URL https://doi.org/10.1093/europace/euae181

9. G. Yang, Y. Kang, **P. H. Charlton**, P. Kyriacou, K. Kim, L. Li, and C. Park. Energy-efficient PPG-based respiratory rate estimation using spiking neural networks. *Sensors*, 24:3980, 2024. URL https://doi.org/10.3390/s24123980

10. J. Mant, R. N. Modi, **P. H. Charlton**, A. Dymond, E. Massou, J. Brimicombe, B. Freedman, S. J. Griffin, F. D. R. Hobbs, G. Y. H. Lip, R. J. McManus, and K. Williams. The feasibility of population screening for paroxysmal atrial fibrillation using hand-held electrocardiogram devices. *EP Europace*, 26:euae056, 2024. URL https://doi.org/10.1093/europace/euae056

11. M. A. Goda, **P. H. Charlton**, and J. A. Behar. pyPPG: A python toolbox for comprehensive photoplethysmography signal analysis. *Physiological Measurement*, 45:045001, 2024. URL https://doi.org/10.1088/1361-6579/ad33a2

12. A. Mathieu, M. Pascual, **P. H. Charlton**, M. Volovaya, J. Venton, P. Aston, M. Nandi, and J. Alastruey. Advanced waveform analysis of the photoplethysmogram signal using complementary signal processing techniques for extraction of biomarkers of cardiovascular function. *JRSM Cardiovascular Disease*, 13:1–12, 2024. URL https://doi.org/10.1177/20480040231225384

13. C. Pettit, **Peter H Charlton**, and P. Aston. Photoplethysmogram beat detection using symmetric projection attractor reconstruction. *Frontiers in Physiology*, 15:1228439, 2024. URL https://doi.org/10.3389/fphys.2024.1228439

14. E. Bianchini, R. E. Climie, C. C. Mayer, M. R. Martina, M. Nandi, A. Schmidt-Trucksass, P. Segers, C. Park, G. Pucci, D. Terentes-Printzios, and **Peter H. Charlton**. Unified language for knowledge dissemination: the vascular ageing glossary, an initiative by VascAgeNet. *Artery Research*, 2024. URL https://doi.org/10.1007/s44200-023-00041-5

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15. J. Hong, M. Nandi, **P. H. Charlton**., and J. Alastruey. Non-invasive haemodynamic indices of vascular ageing: An in silico assessment. *American Journal of Physiology-Heart and Circulatory Physiology*, 325:H1290–H1303, 2023. URL https://doi.org/10.1152/ajpheart.00454.2023

16. S. Zanelli, K. Eveilleau, **P. H. Charlton**, M. Ammi, M. Hallab, and M. EL Yacoubi. Clustered photoplethysmogram pulse wave shapes and their associations with clinical data. *Frontiers in Physiology*, 14:1176753, 2023. URL https://doi.org/10.3389/fphys.2023.1176753

17. **P. H. Charlton**, J. Allen, R. Bailon, S. Baker, J. A. Behar, F. Chen, G. D. Clifford, D. A. Clifton, H. J. Davies, C. Ding, X. Ding, J. Dunn, M. Elgendi, M. Ferdoushi, D. Franklin, E. Gil, M. F. Hassan, J. Hernesniemi, X. Hu, N. Ji, Y. Khan, S. Kontaxis, I. Korhonen, P. A. Kyriacou, P. Laguna, J. Lazaro, C. Lee, J. Levy, Y. Li, C. Liu, J. Liu, L. Lu, D. P. Mandic, V. Marozas, E. Mejia-Mejia, R. Mukkamala, M. Nitzan, T. Pereira, C. C. Y. Poon, J. C. Ramella-Roman, H. Saarinen, M. M. H. Shandhi, H. Shin, G. Stansby, T. Tamura, A. Vehkaoja, W. K. Wang, Y.-T. Zhang, N. Zhao, D. Zheng, and T. Zhu. The 2023 wearable photoplethysmography roadmap. *Physiological Measurement*, 44:111001, 2023. URL http://iopscience.iop.org/article/10.1088/1361-6579/acead2

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22. J. Alastruey, **P. H. Charlton**., V. Bikia, B. Paliakaite, B. Hametner, R. M. Bruno, M. P. Mulder, S. Vennin, S. Piskin, A. W. Khir, A. Guala, C. C. Mayer, J. Mynard, A. D. Hughes, P. Segers, and B. E. Westerhof. Arterial pulse wave modeling and analysis for vascular age studies: a review from VascAgeNet. *American Journal of Physiology-Heart and Circulatory Physiology*, 325:H1–H29, 2023. URL https://doi.org/10.1152/ajpheart.00705.2022

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27. P. A. Kyriacou, **P. H. Charlton**, R. Al-halawani, and K. H. Shelley. Inaccuracy of pulse oximetry with dark skin pigmentation: clinical implications and need for improvement. *British Journal of Anaesthesia*, 130(1):E33–E36, 2023. URL https://doi.org/10.1016/j.bja.2022.03.011

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Book Chapters

2022

49. E. Mejía-Mejía, J. Allen, K. Budidha, C. El-Hajj, P. A. Kyriacou, and **P. H. Charlton**. Photoplethysmography signal processing and synthesis. In P. Kyriacou and J. Allen, editors, *Photoplethysmography*, chapter 4, pages 69–146. Elsevier, 1st editio edition, 2022. URL https://doi.org/10.1016/B978-0-12-823374-0.00015-3

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Conference Papers

2024

55. **P. H. Charlton**, J. Mant, and P. Kyriacou. MSPTDfast: an efficient photoplethysmography beat detection algorithm. In *Proc CinC.*, Karlsruhe, Germany, 2024. URL https://cinc.org/2024/Program/accepted/45_Preprint.pdf

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57. Z. Ding, J. Mant, J. Brimicombe, T. Bucci, B. Buckley, P. Calvert, W. Ding, A. Dymond, G. Lip, R. Proietti, K. Williams, E. Punskaya, and **P. H. Charlton**. Comparing RR-interval-based and whole-signal-based machine learning models for atrial fibrillation detection from single-lead electrocardiograms. In *Proc CinC.*, Karlsruhe, Germany, 2024. URL https://cinc.org/2024/Program/accepted/59_Preprint.pdf

58. S. Ho, F. Kristof, J. Mant, and **P. H. Charlton**. Automated RR interval detection and quality assessment in telehealth electrocardiograms. In *Proc CinC.*, Karlsruhe, Germany, 2024. URL https://cinc.org/2024/Program/accepted/84_Preprint.pdf

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