



Research interests

Peter's research focuses on physiological monitoring of hospital patients, divided into three areas. The first area concerns the development of signal processing techniques to estimate clinical parameters from physiological signals. He has focused on unobtrusive estimation of respiratory rate for use in ambulatory settings (NCT01472133), invasive estimation of cardiac output for use in critical care, and novel techniques for analysis of the pulse oximetry (photoplethysmogram) signal. Secondly, he is investigating the effectiveness of technologies for the acquisition of continuous and intermittent physiological measurements in ambulatory and intensive care settings (NCT01549717). Thirdly, he is developing techniques to transform continuous monitoring data into measurements which are appropriate for real-time alerting of patient deteriorations.

The two clinical trials on which he is currently an investigator are:

- 'Validation of Respiration Rate Algorithms' (NCT01472133), in which the performance of algorithms for estimating respiration rate from ECG and pulse oximetry signals is being assessed.
- 'Feasibility and Efficacy of Continuous In-Hospital Patient Monitoring' (NCT01549717), in which the the feasibility and efficacy of continuous physiological monitoring for prediction of deteriorations is being evaluated and compared to standard ward practice in the ambulatory setting.

For his PhD, he is testing the hypothesis that

Deterioration of inpatients could be detected earlier by monitoring their physiological trajectories.

To test this hypothesis, he is modelling physiological trajectories of patients recovering from cardiac surgery.

His Google Scholar profile is available [here](#).

His Github profile is available [here](#), which includes the Respiratory Rate Estimation Project.

Qualifications

Master of Engineering, Demonstrating Elastic Stability Theory, University of Oxford

Award Date: 1 Jan 2010

Research output

Novel Pressure Wave Separation Analysis for Cardiovascular Function Assessment Highlights Major Role of Aortic Root

Vennin, S., Li, Y., Mariscal Harana, J., Charlton, P., Fok, H., Gu, H., Chowienczyk, P. & Alastruey, J., 12 Nov 2021, (E-pub ahead of print) In: IEEE Transactions on Biomedical Engineering. PP

RELATIONSHIP BETWEEN FIDUCIAL POINTS ON THE PERIPHERAL AND CENTRAL BLOOD PRESSURE WAVEFORMS: rate of rise of the central waveform is a determinant of peripheral systolic blood pressure

Li, Y., Guilcher, A., Charlton, P. H., Vennin, S., Alastruey, J. & Chowienczyk, P., 1 Apr 2021, In: American journal of physiology. Heart and circulatory physiology. 320, 4, p. H1601-H1608

An impedance pneumography signal quality index: Design, assessment and application to respiratory rate monitoring

Charlton, P. H., Bonnici, T., Tarassenko, L., Clifton, D. A., Beale, R., Watkinson, P. J. & Alastruey, J., 1 Mar 2021, In: Biomedical Signal Processing and Control. 65, p. 102339 102339.