

Estimation of Characteristic Impedance using Multi-Gaussian Modelled Flow Velocity Waveform: A Virtual Subjects Study

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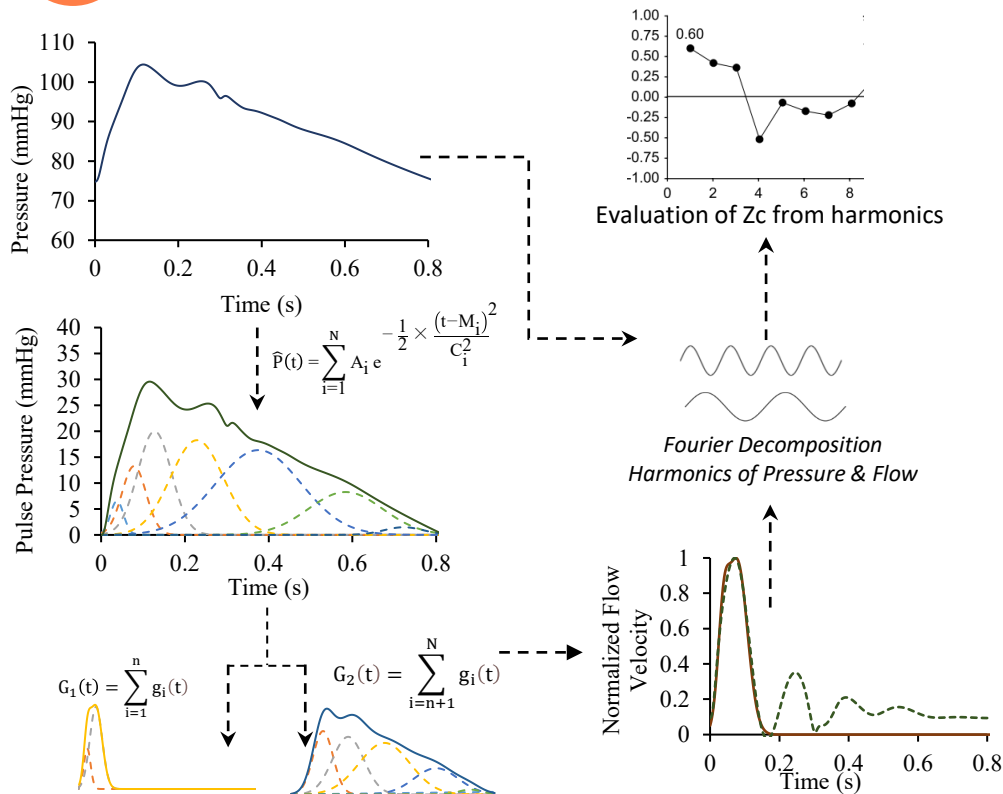
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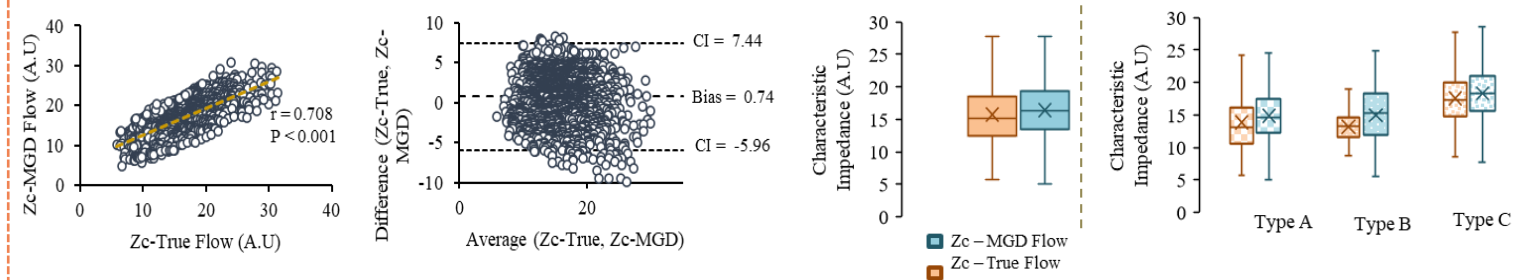
- To estimate characteristic impedance (Z_C) using a flow velocity model obtained from a multi-Gaussian decomposed (MGD) pressure waveform (Z_{C-MGD})
- To compare Z_{C-MGD} with the Z_C derived from the true flow velocity waveform (Z_{C-True}) on 4000+ virtual (healthy) subjects (Aged: 25-75 years)



Multi-gaussian Decomposition Model



- The magnitude spectrum of MGD-Flow and True-Flow yielded a –20dB cut-off within 12 – 14 Hz



- Group average difference: $|Z_{C-MGD} - Z_{C-True}| = 4.72\%$
- Z_{C-MGD} & Z_{C-True} had statistically significant and strong correlation ($r = 0.708$, $p < 0.001$)



- ✓ Demonstrated the accuracy of Z_C obtained using multi-Gaussian decomposed flow velocity waveform constructed from the pressure waveform
- ✓ The potential application of the method involves the wave separation analysis using modelled flow waveform for the carotid artery

