A Gentle Introduction to Flow-based Temporal Interpolation of Power Doppler Ultrasound

Simon Biberger

October 13th, 2022

Abstract

Power Doppler ultrasound (PDUS) is a sonography technique to detect and visualise blood circulation, whereby its acquired image sequences suffer from poor temporal resolution and artefacts caused by aliasing, noise, large displacements, shearings or out-of-plane movements. These pitfalls distort flow fields and have unforeseen consequences on flow-based temporal interpolations.

In this talk, we will introduce the audience to commonly used methods to interpolate PDUS sequences and show their impacts on the visual quality of temporal interpolations. Furthermore, we present our method to detect artefacts in flow-based temporal interpolation caused by incorrect flow and to improve the visual quality by replacing regions with artefacts by locally better results. This is demonstrated on real data.