Processing

Table of Contents

Part 1 - Autocorrelation

SAME AS BEFORE

```
figure(1);
sig = snr_inc; % final preprocessed signal
ac = autocorr(sig, length(sig)/2);
plot(ac);
title('Processing - Part 1: Autocorrelation');
```
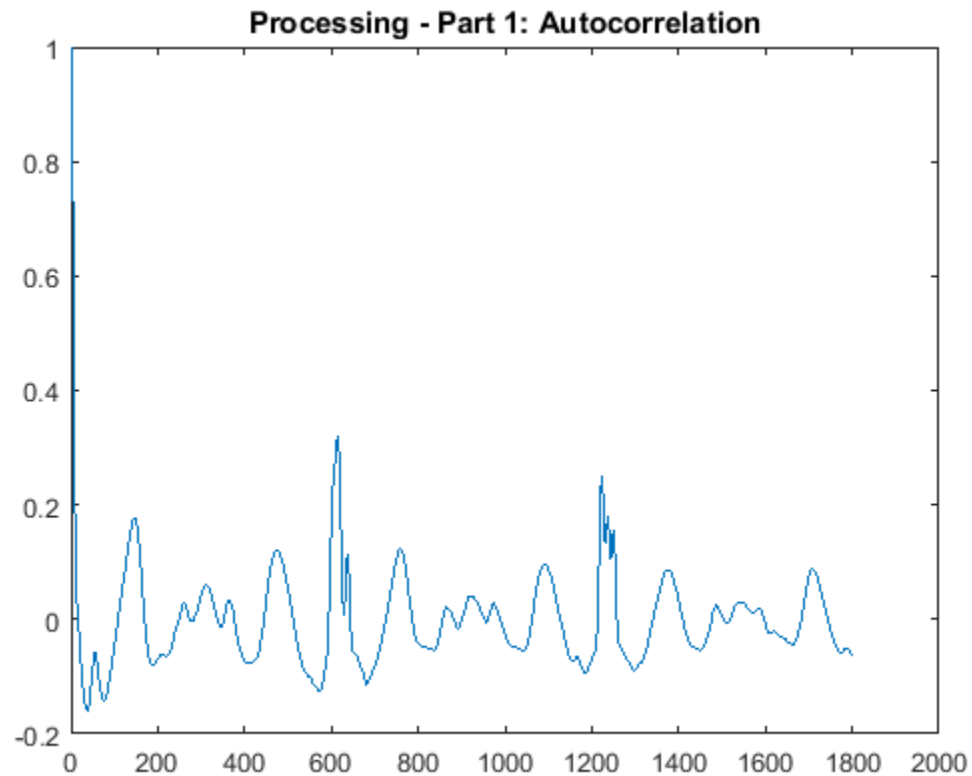
Part 2 - A Visual Guess

SAME AS BEFORE

```
nv = 500;
display(nv);
```

nv =

    500

Part 3 - Find Peaks

SAME AS BEFORE

```
[sval, slag] = findpeaks(ac, 'MinPeakDistance', 0.3*fs); % finds peaks
 of the autocorrelation
[lval, llag] = findpeaks(sval);
pts = slag(llag); % heart stroke sample #
display(pts);
ns = [pts(1); diff(pts)]; % nummber of samples between adjacent peaks
display(ns);
```

pts =

       614
     1223

ns =

   614
   609

Part 4 - Average Sample Numbers

SAME AS BEFORE

```
avg_s = mean(ns);
display(avg_s);
```

avg_s =

  611.5000

Part 5 - Average Time

SAME AS BEFORE

```matlab
avg_t = avg_s./fs; % average time between heart strokes
display(avg_t);
```

avg_t =

    1.6986

Part 6 - Heart Rate (HR)

SAME AS BEFORE

```matlab
hr = 60/avg_t; % caluclates heart rate
display(hr);
```
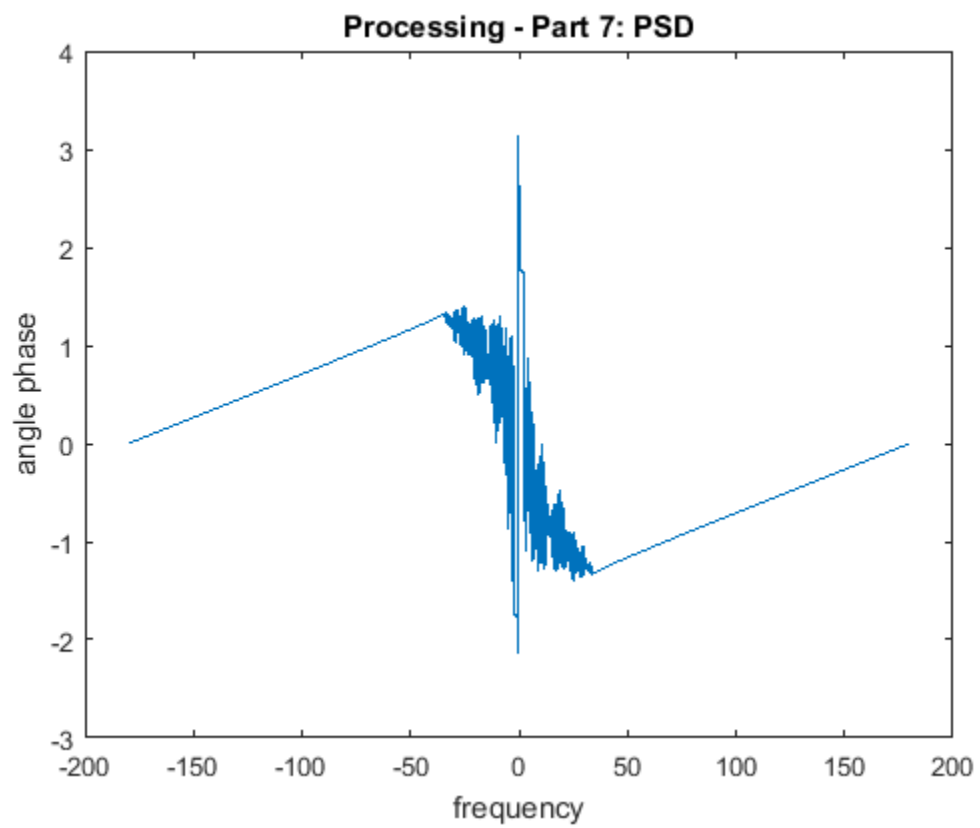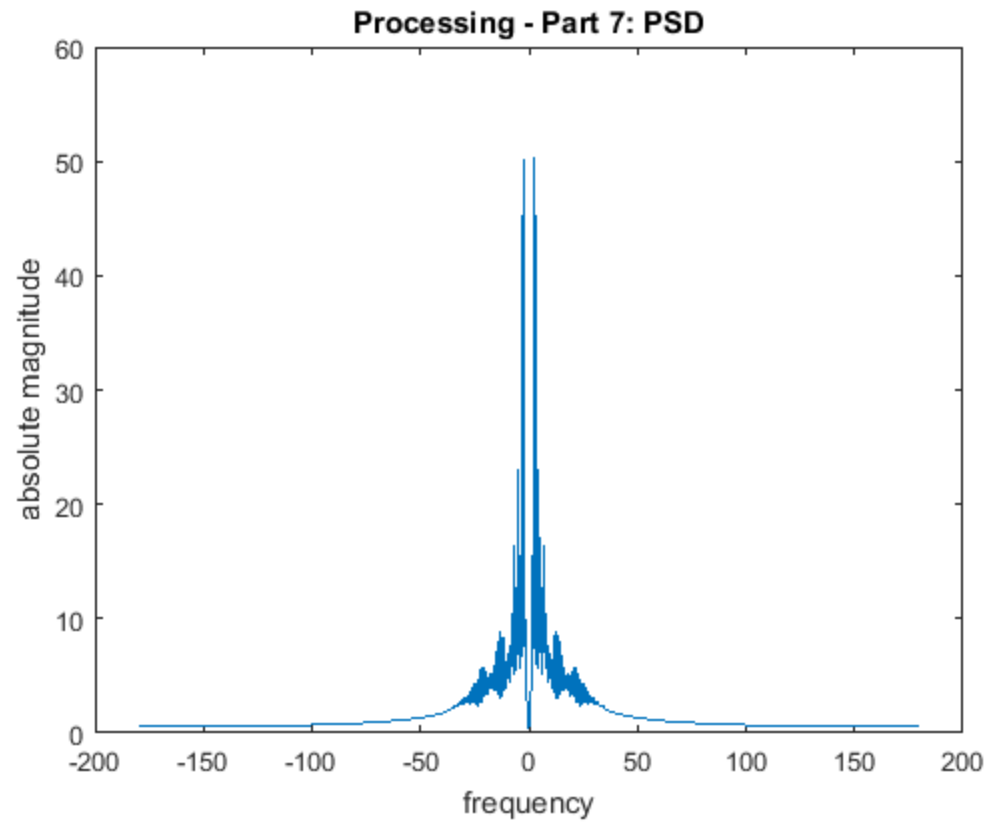
hr =

    35.3230

Part 7 - Power Spectrum Density (PSD)

SAME AS BEFORE

```matlab
ac_f = fftshift(fft(ac));
n_ac = length(ac_f);
fac_f = (-n_ac/2:n_ac/2-1)*(fs/n_ac);
figure(2);
plot(fac_f, abs(ac_f));
xlabel('frequency');
ylabel('absolute magnitude');
title('Processing - Part 7: PSD');
figure(3);
plot(fac_f, angle(ac_f));
xlabel('frequency');
ylabel('angle phase');
title('Processing - Part 7: PSD');
```

Processing - Part 7: PSD

Processing - Part 7: PSD

Published with MATLAB® R2015a