

6.s02: EECS II - From A Medical Perspective

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1. (a) Average heart rate: 87.7 bpm
Standard deviation of RR interval: 0.0021

```
function [ times, rrt ] = ecg2rr( ecg, minheight, mindistance )
    t = linspace(0, 30+(5/60), length(ecg));
    [pks, locs] = findpeaks(ecg, 'MINPEAKHEIGHT', minheight, 'MINPEAKDISTANCE',
        mindistance);
    times = diff(t(locs));
    rrt = t(locs(2:end));
end

sum(times.^-1)/length(times) %bpm
std(rrt) %std
```

- (b) K=2
Centroids: 0.0105, 0.0137
Heart rates: 95.12, 73.23

```
[IDX, C] = kmeans(times, 2, 'Start', [min(times); max(times)])
C %centroids
C.^-1 %heart rates
```

- (c) K=3
Centroids: 0.0101, 0.0127, 0.0182
Heart rates: 99.22, 78.81, 54.84
Clusters: <1, 1146> <2, 1307> <3, 106>

```
[IDX, C] = kmeans(times, 3, 'Start', [min(times); mean(times); max(times)])
C %centroids
C.^-1 %heart rates
```

2. (a) blah