

Re: R-R detection

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From: Rich Grise (null_at_example.net)

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on Friday 16 July 2004 05:42 am, Bob Masta wrote:

> On 16 Jul 2004 01:05:43 -0700, ts5066@ms27.hinet.net (Frankie) wrote:

>> *I am seeking a software program that detects heart rate variability in
>> time-series signals. Does anyone know where I could find such software
>> as freeware or shareware? Or some helps to program myself.*

>

> *If you have a clean-enough recording, you may be able to find
> some threshold level that will reliably detect a QRS complex
> or flow peak. Then you simply note all the distances (in samples
> or msec) between these events and sort them to a histogram
> that shows all the intervals. If the variability is low, they will
> tend to cluster in a central peak at the average interval.*

I worked with a box that did exactly what the Frankis seems to be talking about. The peak detector was written by some other guy, but it was really simple – just a couple of filters implemented in software. It gave a very clean, rock-stable one-pulse-per-beat output, which then got counted.

I don't recall how he wrote the filters, and didn't really understand it anyway, but basically, take the transfer function of whatever filter you're building, and code it. Catching a QRS pulse is almost trivial, if you know what you're doing. :-)
At least Monty Barker (that was the guy's real name, I swear) made it look easy.

I suppose you'd make something with a response peak at the fundamental of the (approx) half-sine at the start of the wave, and even a little analysis of the waveform itself. (this box even spotted V-Fib – it's just another filter.)

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Good Luck!

Rich