# **Lab 8 Writeup Template**

Your Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Table 2. Heart rate measurements with different simulated noise.**

| **Noise type** | **Heart rate measured by pulse oximeter (bpm)** | **Heart rate measured by VI (bpm) without DWT** | **Heart rate measured by VI (bpm) with DWT** |
| --- | --- | --- | --- |
| None |  |  |  |
| Slow drift |  |  |  |
| White noise |  |  |  |
| Muscle artifact |  |  |  |
| Motion artifact |  |  |  |
| 60 Hz |  |  |  |

**Table 4. Variability in R-R intervals without noise**.

| **Patient number** | **Actual diagnosis** | **variability (std/mean) in R-R intervals**  **(After wavelet transform)** |
| --- | --- | --- |
| 113 | Sinus |  |
| 117 | Sinus |  |
| 201 | Arrhythmia |  |
| 203 | Arrhythmia and Tachycardia |  |
| 208 | Arrhythmia |  |
| 232 | Bradycardia |  |

**Table 5. (Optional) Variability in R-R intervals with \_\_\_\_\_\_\_\_\_\_\_\_\_ noise.**

| **Patient number** | **Actual diagnosis** | **variability (std/mean) in R-R intervals**  **(After wavelet transform)** |
| --- | --- | --- |
| 113 | Sinus |  |
| 117 | Sinus |  |
| 201 | Arrhythmia |  |
| 203 | Arrhythmia and Tachycardia |  |
| 208 | Arrhythmia |  |
| 232 | Bradycardia |  |

**Table 6. Lab summary**. Answer the following questions based on your observations. Again, there is no wrong answer. Your answers can be just a few words.

| **Question** | **Answer** |
| --- | --- |
| Which wavelet and number of levels did you end up using in multiresolution analysis? |  |
| Which kind of noise distorts ECG signals the most? |  |
| For Table 4, is 0.1 a good cutoff for the variability metric to detect arrhythmia? If not, what cutoff would you use? |  |
| Will you recommend wavelet analysis to your friends and colleagues? |  |
| (Optional) Any suggestions for improving the performance of the VI? |  |