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Booklets

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Title: Signal and biosignal acquisition system for teaching in education: Conditioning and analysis methods with embedded devices physics, Electronics, Electrical magnitudes and their measurement

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Introduction

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Conclusions

References

Introduction

Engineering area	Signal type
Biomedical	ECG, EMG and EEG
Automotive	Gas mixture and oxygen
Electronic	Ultrasonic and Optics
Mechanical	Movements

Table 1 Signal types

State of Art

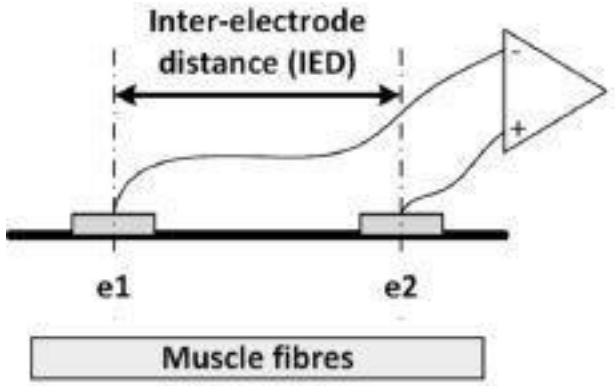

Figure 1 General acquisition array sEMG

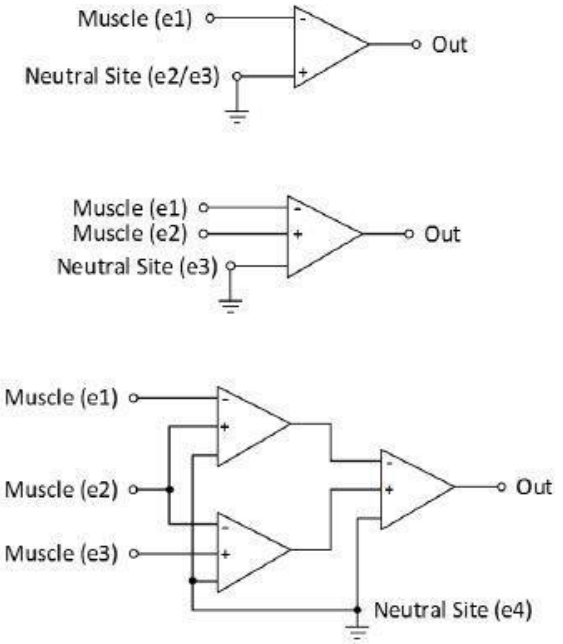

Figure 2 General acquisition sEMG several derivations

State of Art

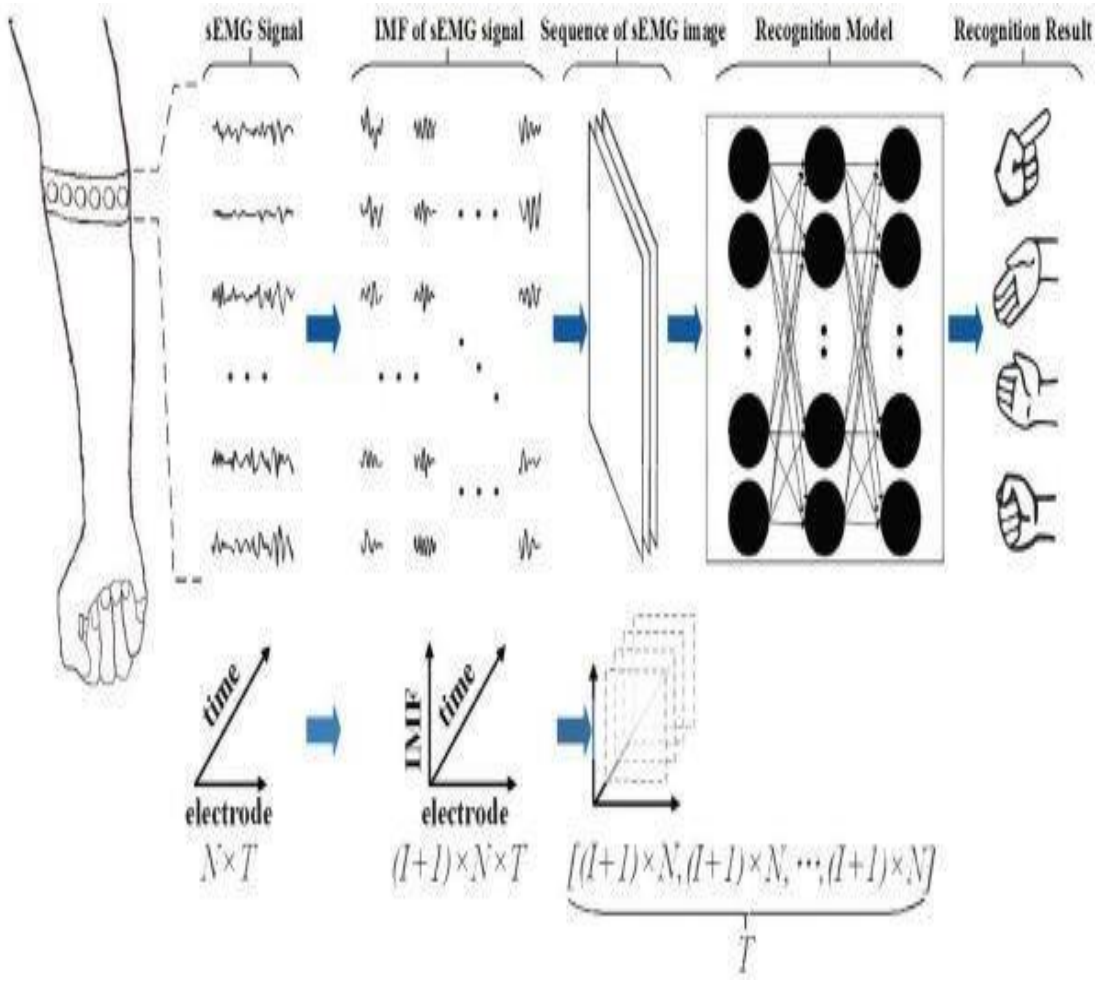

Figure 3 Gesture recognition through Bandmyo

State of art analysis

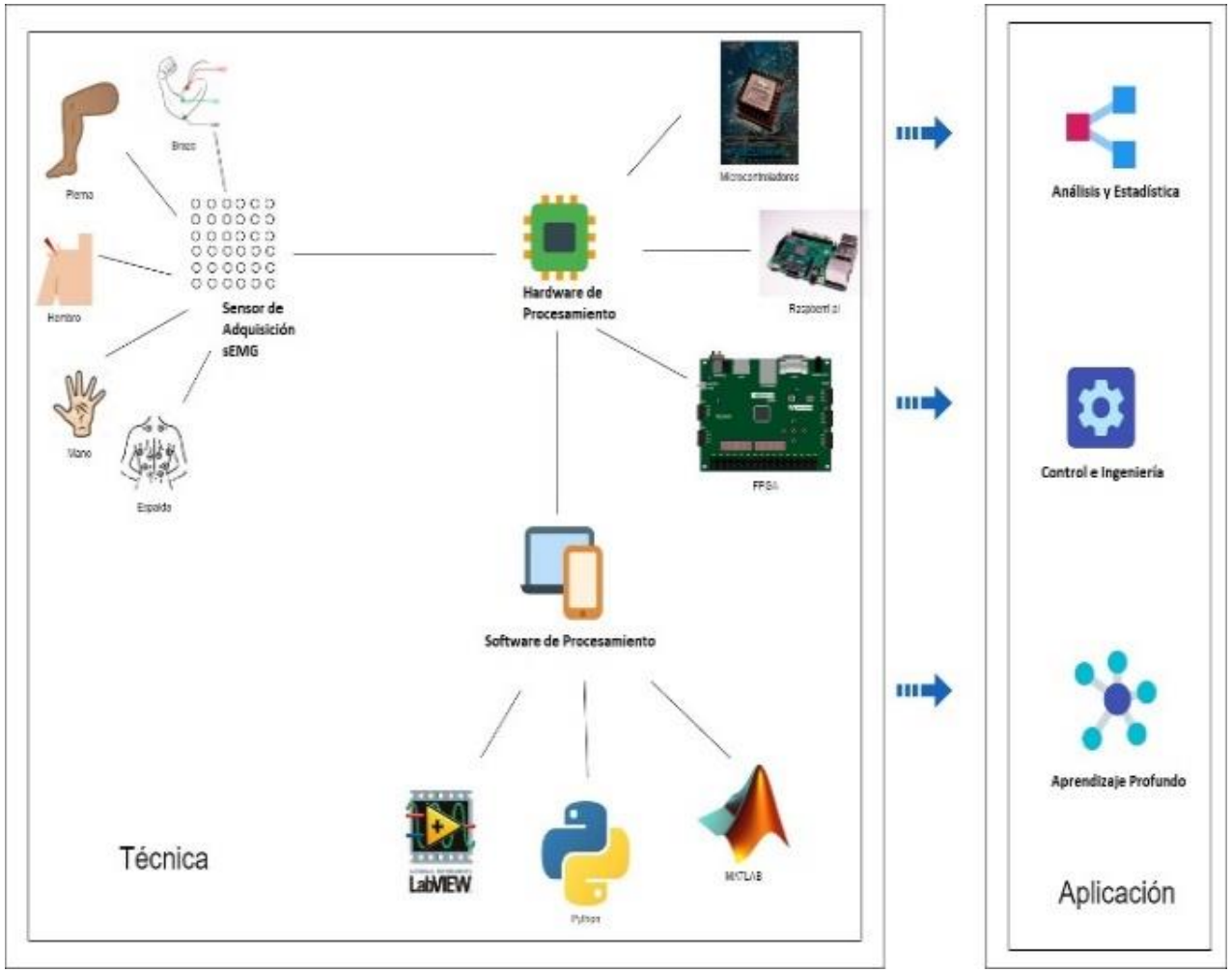

Figure 4 State of Art analysis

System development

Figure 5 Block system diagram

System development

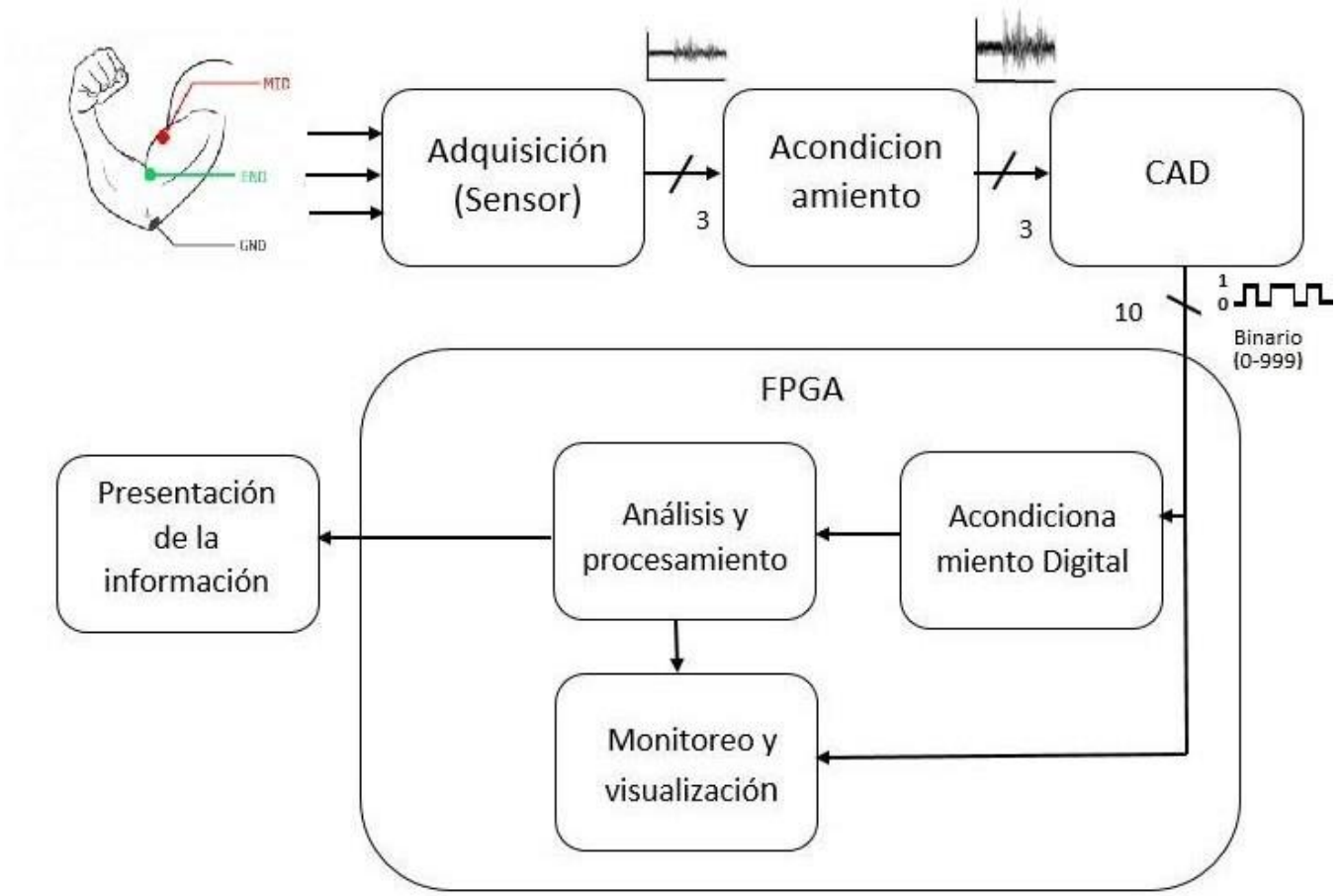

Figure 6 Project Block diagram extended

System development

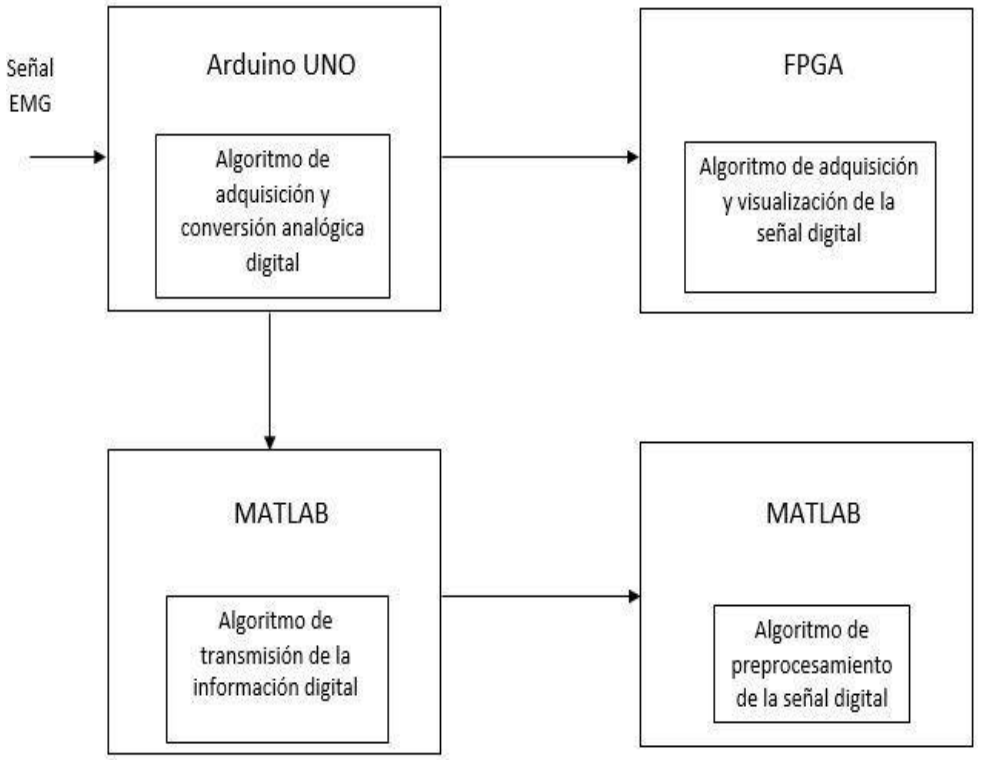

Figure 7 Interface and communication block diagram

System development

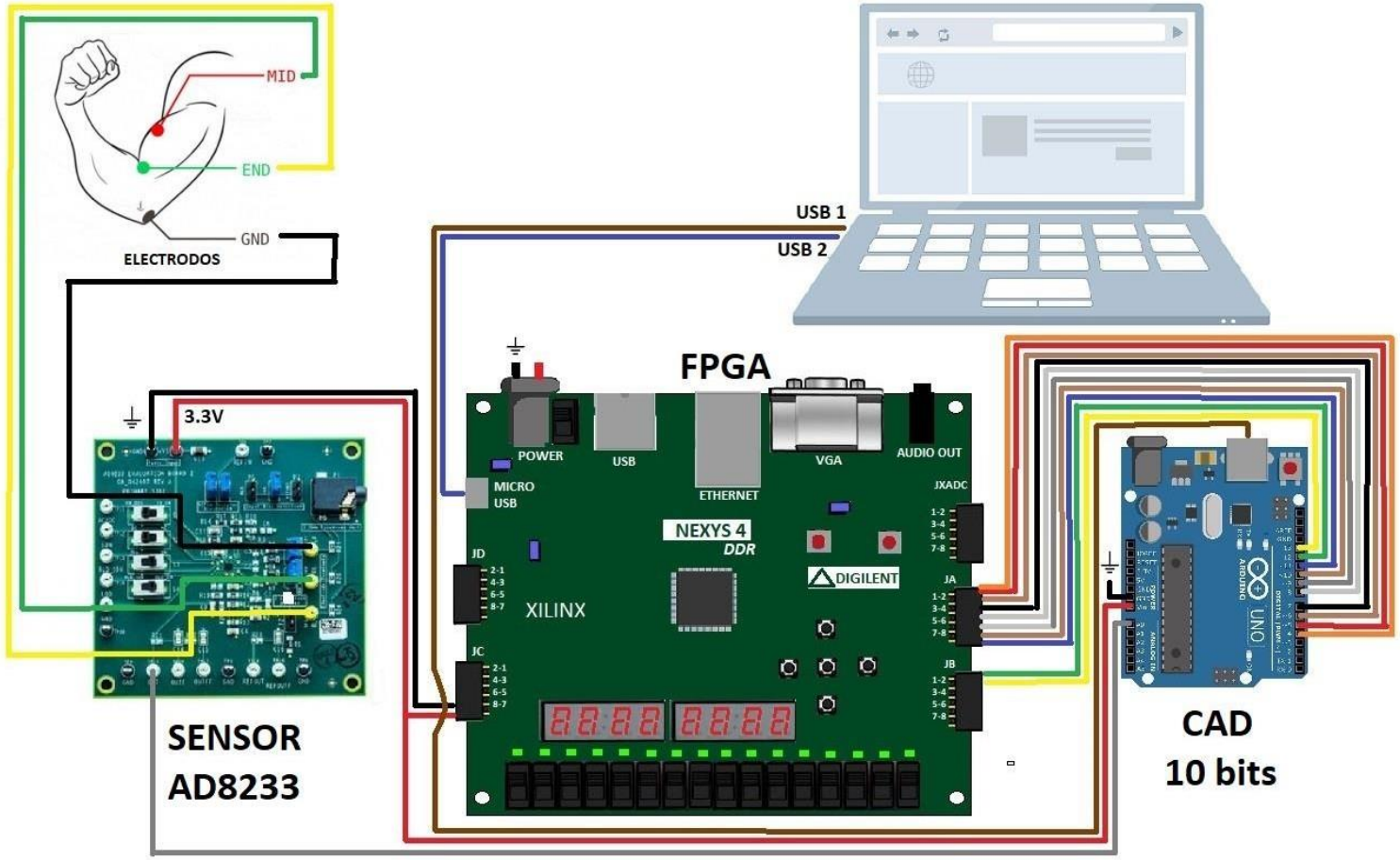

Figure 8 Schematic prototype of system

System development

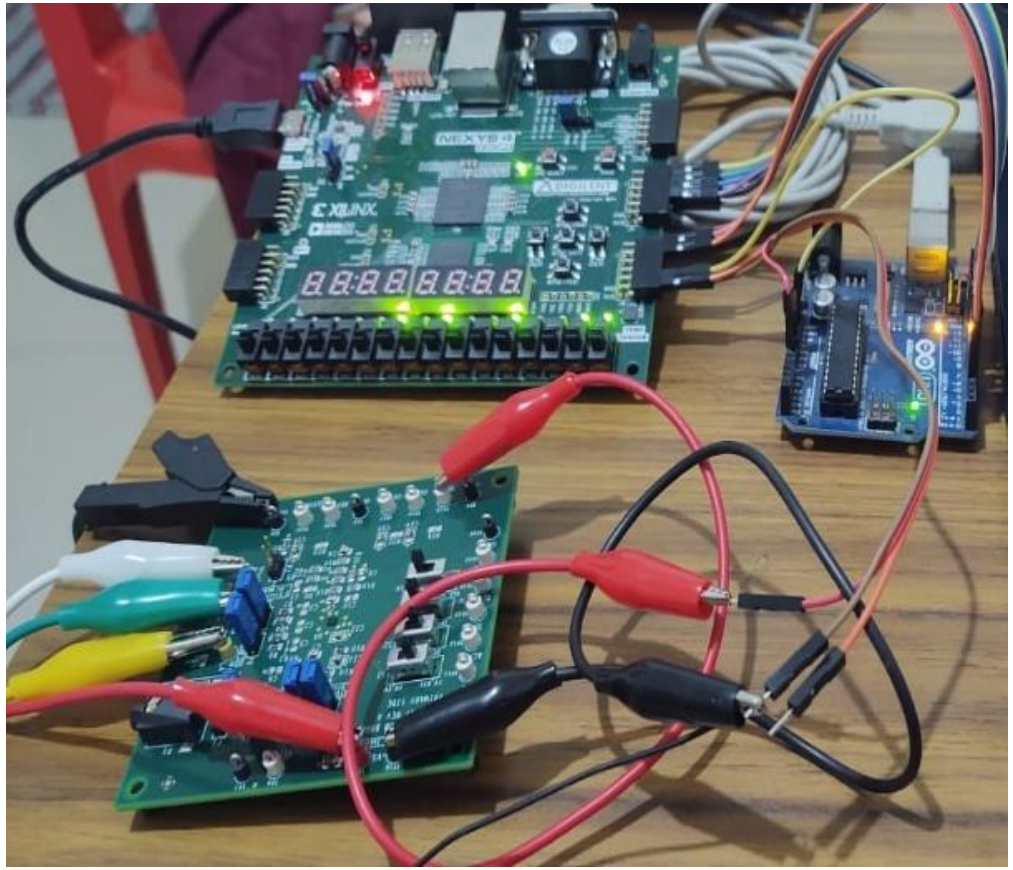

Figure 9 Signal connection

System development

Figure 10 FPGA digital display

Results

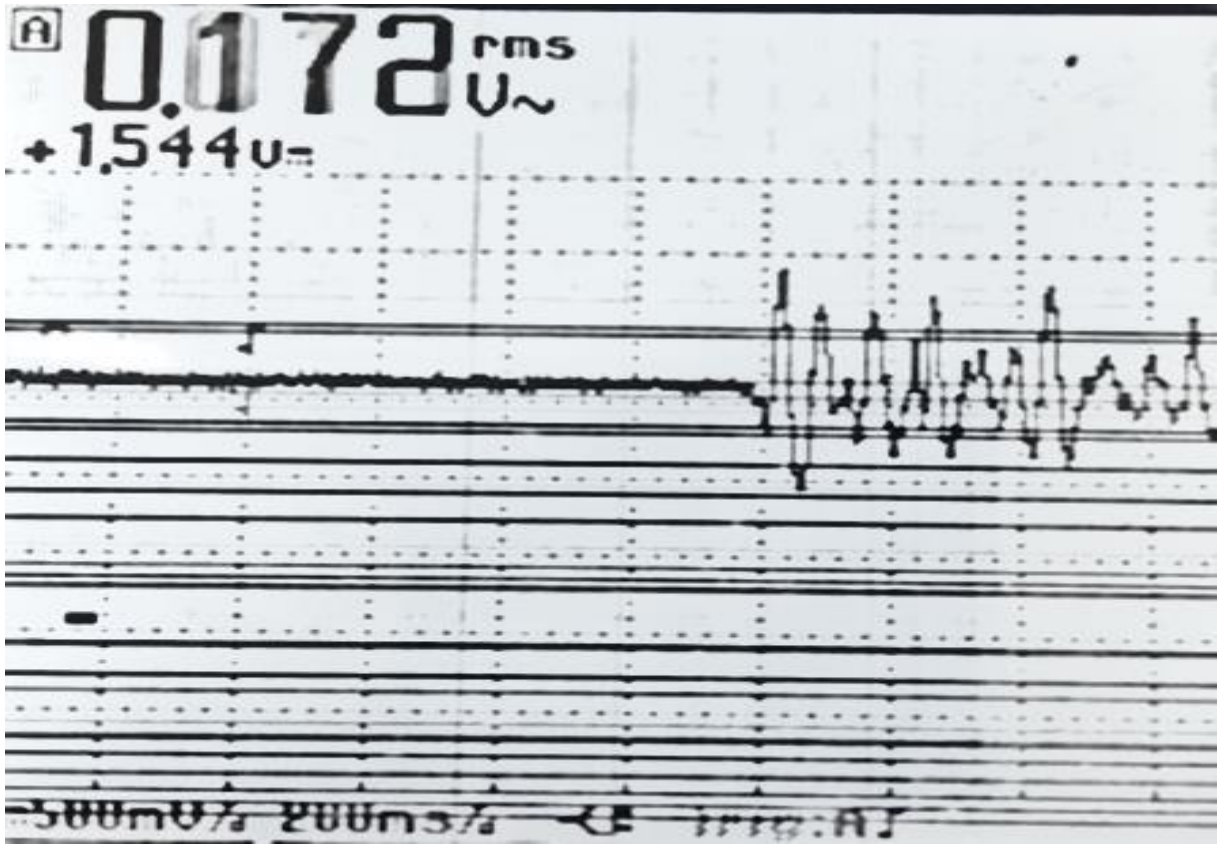

Figure 11 Relax-strength analog signal ECG acquire with sensor

Results

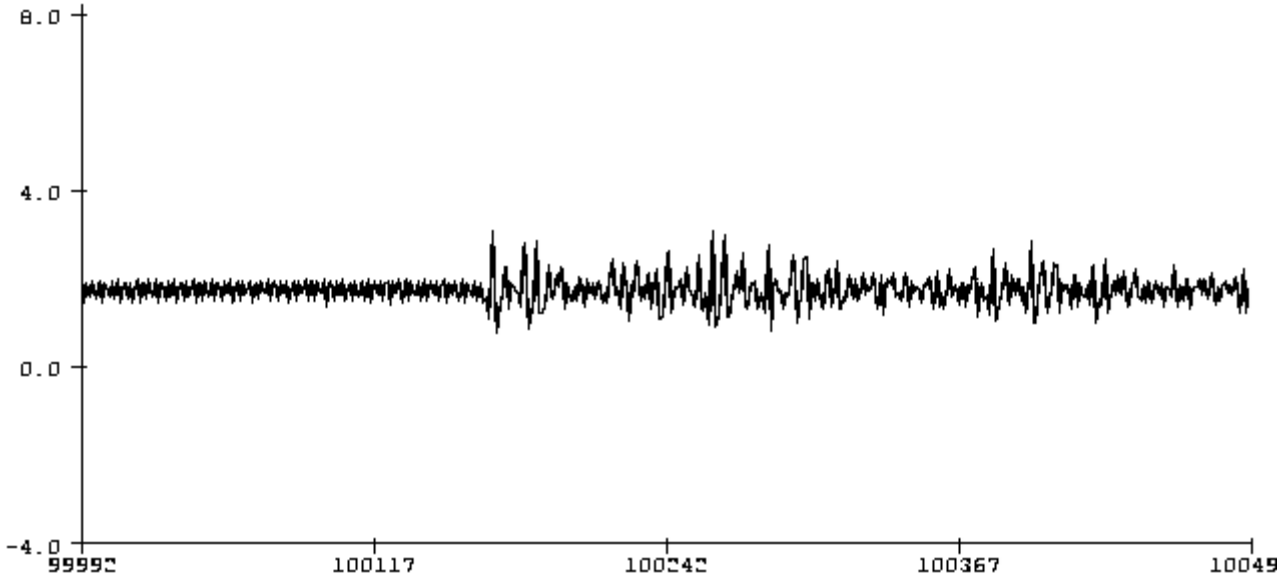

Figure 12 Arduino EMG digital signal (strength)

Results

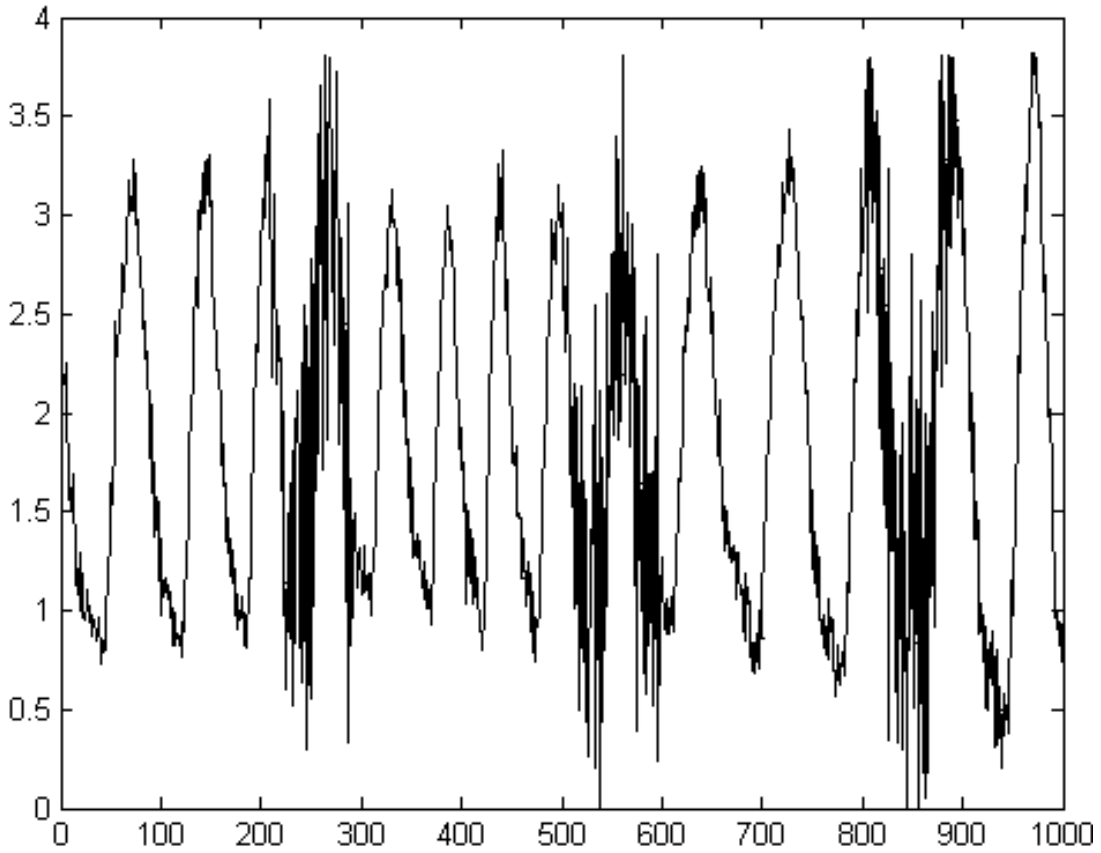

Figure 13 MATLAB digital signal 1

Results

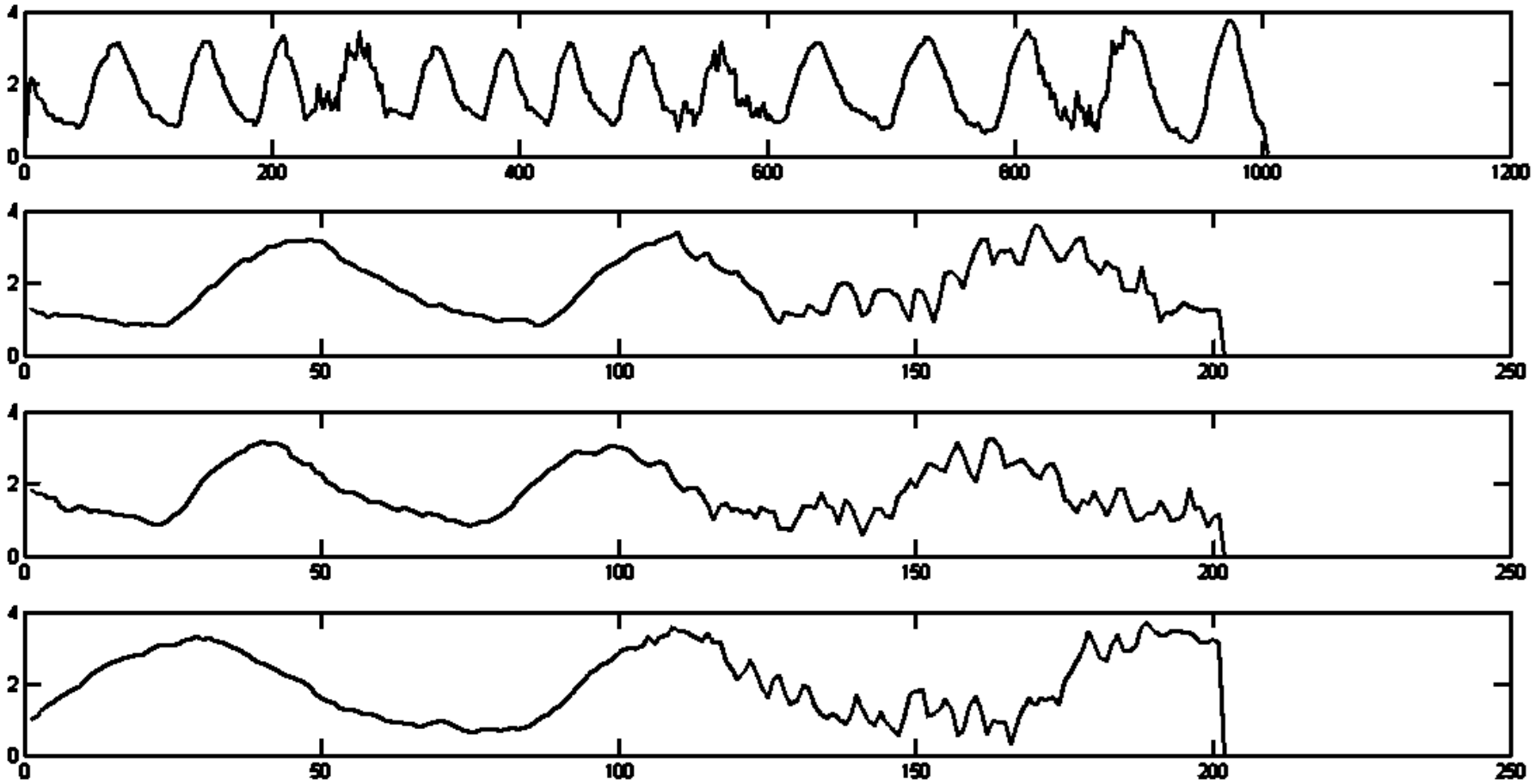

Figure 14 Preprocessed, segment and compare
EMG digital signal in MATLAB

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