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| Book Name: | [**Science and Technology: Developments and Applications**](https://www.bookpi.org/bookstore/product/science-and-technology-developments-and-applications-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4990** |
| Title of the Manuscript: | **DEVELOPMENT OF WEARABLE DATA ACQUISITION DEVICE FOR BLOOD PRESSURE VARIABILITY MONITORING** |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**International Journal of Advances in Electronics and Computer Science, 10(7): 2394-2835, 2023.**

**Available:** [**https://ijaecs.iraj.in/paper\_detail.php?paper\_id=20028**](https://ijaecs.iraj.in/paper_detail.php?paper_id=20028)

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **This manuscript presents the development of a wearable data acquisition device for blood pressure variability (BPV) monitoring. BPV has been widely recognized as an important predictor of cardiovascular outcomes, and the ability to measure it using a wearable device represents a significant advancement in non-invasive monitoring. The proposed system leverages accessible and cost-effective sensors to address the limitations of expensive alternatives like Finapres. By integrating MAX30102, AD8232, and Arduino Uno, the study provides an innovative approach to real-time BPV assessment. The findings could have practical implications in home healthcare, telemedicine, and remote patient monitoring, making it a valuable contribution to medical and biomedical engineering research.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **The title is mostly suitable but could be made more precise to reflect the core focus of the study. A more refined alternative could be: "Development of a Low-Cost Wearable Device for Blood Pressure Variability Monitoring Using Pulse Arrival Time." This title highlights the affordability aspect and the key methodology used.** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **The abstract provides a good summary of the manuscript, but it lacks specific numerical results and a clear articulation of the device’s validation process. Consider adding:**   * **A brief mention of key findings, such as BPV differences observed in control and hypertensive subjects.** * **More details on how noise reduction techniques improved signal quality.** * **Explicit mention of the sample size used for validation.** |  |
| **Is the manuscript scientifically, correct? Please write here.** | **The manuscript is scientifically sound and presents a well-structured methodology. However, a few areas need further clarification:**   * **The justification for using pulse arrival time (PAT) over pulse transit time (PTT) should be elaborated, particularly in relation to its accuracy in BPV estimation.** * **The results mention that noise was present in PAT signals, and a transition to DPAT (PTT) was suggested. However, a comparative validation of PAT vs. DPAT in terms of effectiveness would strengthen the study’s claims.** * **The use of linear interpolation for RR and PAT values should be further justified—why was this chosen over other signal processing techniques?** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | **The references are mostly sufficient and relevant, covering both foundational and recent studies (2017–2022). However, some more recent works on AI-based BPV monitoring could be included. Suggested additional references:**   * **Studies on machine learning models for BP estimation using wearable sensors.** * **Recent developments in non-invasive continuous BP monitoring.** |  |
| Is the language/English quality of the article suitable for scholarly communications? | The manuscript is mostly well-written but has occasional grammatical issues and awkward phrasing. Some suggested improvements as:   * "Advent of wearable technology has gained momentum in recent times, also population has become user-friendly with such devices." * "Exorbitant cost of Finapres, ready availability of wearable sensors, and adequate correlation of beat-to-beat blood pressure with pulse arrival time and pulse transit time has led to development of the inexpensive hardware for blood pressure variability monitor."   A thorough proofreading by a native English speaker or using language enhancement tools (e.g., Grammarly) is recommended. |  |
| Optional/General comments | * The **figures and diagrams** are relevant but should include clearer legends and axis labels for better readability. * The **study should explicitly state if any clinical trials or validation against standard BP measurement devices were conducted.** * **Discussion section** could better compare the developed system with existing BPV measurement techniques, particularly highlighting its advantages and limitations.  1. The abstract is too general and does not provide specific numerical results of the device.  * Include specific numerical findings from the study (e.g., accuracy of BPV measurement, correlation values with existing devices). * Clearly state how the developed device compares to Finapres or other BP monitoring devices. * Briefly mention how noise reduction (using DPAT) improved signal quality.  1. The manuscript lacks details on participant recruitment, ethical approval, and standardization of measurements. The justification for using PAT instead of PTT needs elaboration. Noise removal techniques (other than switching to DPAT) are not well described.  * Clearly describe participant selection criteria (age, gender distribution, clinical history). * Explain why PAT was chosen over PTT for BPV estimation. If DPAT is preferred, how does it compare in performance? * Provide more details on signal processing techniques used to remove noise.  1. The results lack comparative analysis with existing BP variability methods. The significance of missing peaks in BPV spectra for hypertensive patients is not sufficiently explained. The transition from PAT to DPAT is mentioned but not quantitatively validated.  * Include statistical comparisons of the developed device against Finapres or standard BP monitors. * Explain why missing LF and HF peaks in hypertensive subjects are clinically important. * Provide quantitative evidence that DPAT improves measurement accuracy over PAT.  1. Some **figures lack clear axis labels, legends, and descriptions.** Figure 5 (algorithm for BPVcalculation**) is not well explained**. ECG and PPG waveforms in Figure 6 need **better annotation to show PAT and DPAT measurements clearly**.  * Add clear axis labels and units in all graphs. * Use arrows/annotations in Figure 6 to mark important points (e.g., R-wave, PAT measurement). * Expand Figure 5’s explanation to include step-by-step BPV calculation methodology.  1. The manuscript has several grammatical errors and awkward phrasing. Some technical terms are introduced without sufficient explanation.  * Improve sentence clarity and grammar.   Avoid overly complex sentence structures. |  |

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| **PART 2:** | | |
|  | Reviewer’s comment | Author’s comment *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail)* |  |

**Reviewers:**

**Faten Imad Ali, Al\_Nahrain University, Iraq**