We are thankful to Reviewer_2 for constructive comments, which helped us to improve the overall quality of revised manuscript. To address the reviewers concerns, we have made significant changes in section 2 and section 3 of manuscript. Please find the author response in italics for reviewer's comments.

Comments of Reviewer_2

1. The quality of language of the document has to be generally improved. Sometimes the meaning is not clear. Examples: Line 35 f. "User Interface was developed using Python as, Python framework is effective tool that can handle low level and networking functionalities."

    (a) [The quality of language of the document has to be generally improved]
    *Reply: The language has been considerably improved in revised manuscript. To clear the meaning, additional text has been introduced in Revised Manuscript.*
    o *Section 2.2, Improved Explanation of Platform design.*
    o *Section 2.3, Improved Explanation of Decision Support System*
    o *Additional Figures has been introduced (Refer fig in Author Comment 1) and quality of rest of the figures has been significantly improved.*
    o *Similarly, the fuzzy description has been improved in manuscript with rules. Please refer section 2.3.1 of revised manuscript.*
    o *Literature review for scientific reasoning has been introduced in revised manuscript with additional references. Please refer following text as part of revised manuscript with additional references.*

    "The python module is an effective tool to reduce the complexity of overall system, usually deployed at client side as this allows user to analyse the results in 2D/3D space in user friendly way (Scherer et al., 2000). In addition offers benefits of open source community and wider programming choices. Python module has been instrumental in development of software architecture framework to behavioral modelling for CPS (Ringert et al., 2014). On the other hand, in the development of CPS test-beds, the python module has been used as it supports adaptability and re-configurability (Adhikari et. al, 2016). Although, MATLAB is also potential choice for development of soft computing framework for CPS. However, Python offers advantages over MATLAB mainly due to Open Source with comprehensive library, choices of 2D/3D graphic packages, ease of re-configurability and low cost."

    (b) [Sometimes the meaning is not clear. Examples: Line 35 f. "User Interface was developed using Python as, Python framework is effective tool that can handle low level and networking functionalities]
    *Reply: Sentences ambiguity has been sorted out in revised manuscript. The statement has been replace with "The python module is an effective tool to reduce the complexity of overall system, usually deployed at client side as this allows user to analyse the results in 2D/3D space in user friendly way (Scherer et al., 2000). In addition offers benefits of open source community and wider programming choices."*

2. Many statements are not specific enough Example: Line 33f: "Traditional methodologies cannot classify and quantify the targeted quantities, therefore soft computing approaches comes into scenario." Line 39f: "This framework enables interoperability & ease of integration and supports vision of Internet of Things (IoT)." Python is a script language. Refer to specific library

    Reply:
    (a) *The overall language has been significantly improved in revised manuscript. The sentence begin with "Traditional…" has been removed from the text. Whereas, the sentence begin with "This Framework…" has been modified and new term reconfigurable has been introduced in the text. Please refer text "The re-configurability and scalability offers value addition, as it offer freedom to modify the system as per changing application requirements and improves the adaptability of overall system in different*

scenarios. CPS are primarily scalable and reconfigurable systems and can be modified based on volume of data, bandwidth requirements, power requirements and sensing applications."

[Python is a script language. Refer to specific library]

*(b)* *The specific libraries for Python has already been mentioned in discussion manuscript. Please refer page no 2, line no 29. Moreover, these libraries has been defined in supplementary material (please refer python code in supplementary material)*

3. The authors claim that the "Target of this proposed research is to provide simple, efficient, cost effective and socially acceptable means to detect the presence of contamination in water distribution network using applications of CPS." However, social acceptance is not addressed in the paper.

*Reply:*

*(a)* ["Target of this proposed research is to provide simple and cost effective…."]
   *Additional text in section 2.4 depicts the comparative analysis for cost effective ness. The text is as follows*
   *"Commercially available multiparameter water quality monitoring system (eg. YSI Sonde V2) varies in the range of 5000 US $ to 8000 US $ (with computing framework) mainly used for Industrial purpose. On the other side, general purpose sensor nodes of commercially available Vernier cost around 800 US$ to 1000 US$ (without computing framework) for potable water testing. The cost of commercially available computing tools (eg. MATLAB and LoggerPro) varies in the range of 350 US$ to 500 US$. By exploiting the benefits of open source computing modules and libraries, the overall system cost can significantly be lower down. For proposed system, the cost of sensor array is summation of individual cost of pH, DO, ORP, EC and Temperature nodes and was 530 US$. In addition, the hardware platform has a cost of 59 US$, which includes Arduino MEGA 2560 and XBee (wireless data transmission unit). Therefore, overall cost of sensors and hardware unit was 589 US $. The cost of consumables, data collection, power source, scientific supervision, labor, resources used for sample collection and shipping to analytical laboratories has not been taken into account, as it will be approximately same for all other commercially available systems".*

*(b)* [However, social acceptance is not addressed in the paper.]
   *Socially acceptable term has been removed from the text, as Social Acceptance is wide ranging term outlining societal cooperation, contribution to various other economic factors. Since, the proposed paper do not cover such issues, except cost analysis. Therefore, this term "socially acceptable" has been removed from the text.*

4. Similarly, it is not explained why the approach is cost effective. Cost for data transfer by wireless technology, maintenance of the system. For real time application: Frequency of data transfer has impact on battery life time, cost, storage capabilities, and data treatment.

*Reply:*

*(a)* [For why the approach is cost effective?]
   *Please refer Reply 3. The explanation of cost effective has been included.*

*(b)* [For Cost for data transfer by wireless technology, maintenance of the system?]
   *Cost of wireless data transmission has been mentioned on hardware platform design. However, maintenance cost has not been included. Please refer text in reply 3.*

5. Use of Fuzzy set technology is not well explained. Comparison with existing techniques (PCA: Principal component analysis, . . .) is missing. Why is Fuzzy theory superior?

*Reply:*

*(a)* [Use of Fuzzy set technology is not well explained?]

*The text relevant to fuzzy logic have been significantly improved in revised manuscript in terms of overall language, rules development and procedure. The principle on which rules are based have been improved. Additional figure to describe the rule procedure has been added to text (refer fig 3 in Author Comment Section 1 and Short Comment Section 2). Literature review has been included and Supplementary file has been included by name Supplementary_Material_4.pdf with all the rules mentioned.*

(b) [Comparison with existing techniques (PCA: Principal component analysis) is missing. Why is Fuzzy theory superior?]
*Additional text has been added in revised manuscript with Section 2.3. This particular text paragraph demonstrate the superiority of fuzzy over PCA and other regression methods.*

"Literature review indicates, fuzzy perform better than both linear and non-linear regression methods in terms of model building, adaptive modelling and decision making (Doorsy and Coovert, 2003). Although, Principal Component Analysis (PCA) is also one of the favorite tool for information extraction and analysis. However, PCA is sensitive to missing data and poor correlation among water quality parameters (Sarbu and Pop, 2005). Moreover, fuzzy offers simplicity, flexibility, reliable results, can handle incomplete data sets and nonlinear functions. Therefore, Fuzzy has been extensively used in development of decision support system for applications pertaining to water and CPS. This approach have been widely discussed in several environmental applications ranging from development of decision support system based for urban water management (Macropoulas et al., 2003) to Fuzzy based CPS system (Leu and Zhang, 2009)".

6. "User friendly Interface" -> more details required.
   *Reply: Please refer text in reply 1. This text in revised manuscript elaborate the user friendly interface.*

7. Information about detection capabilities is missing: reliability of detection, rate of false positive detections:
   *Reply: Validation method has been changed and earlier mentioned radar chart in fig 3 has been replaced by Mean Average Percentage Error chart as per reviewer_1. The MAPE testify the validity of results can be referred from fig 3 of section Author Comment 1. MAPE can give enough evidence of deviation of proposed system from real and actual values. Therefore, we could measure reliability and rate of false detection from MAPE.*