**Assess water quality in river using fuzzy logic**

*‘water quality fuzzy inference systems’ <- find this in nuslibrary*

1. Specific description of the application (Introduction)
2. Inputs and outputs of the fuzzy system
3. Fuzzy Rules
4. Membership Functions
5. Advantages and Disadvantages
6. Suggestion for future improvement
7. Conclusion

<https://www.geeksforgeeks.org/fuzzy-logic-introduction/>

Traditionally, WQI and ISQA are used to measure the quality of water through an index. However, these indices use a limited number of parameters for calculation. They do not consider toxic pollutants. Some parameters in the index equation can influence the final score to a large extend without valid justifications. In addition, the most critical deficiency of these indices is the lack of dealing with uncertainty and subjectivity present in this complex environmental problem.

**Structure of the report**

**Abstract**

**Introduction**

Traditional way of assessing water quality (list the relevant water quality indices)

Problem with these indices

Solution -> use fuzzy inference system.

1. **Methodology**

Description of the application in fuzzy logic

State the fuzzy inference system with figure to explain

* 1. **Inputs and outputs of the fuzzy system**

Inputs -> water quality parameters

Outputs -> water quality score

State why the water quality parameters are relevant

**1.3 Fuzzy Rules**

Write the rules in linguistic form and also in fuzzy language

**1.4 Membership Functions**

Just use triangle and state that triangle is the simplest out of all

**1.5 Fuzzy inference system of the application**

Step by step of how the fuzzy inference system is like

1. **Advantages and Disadvantages**

Advantages can show the plot with the results better than traditional indices

Disadvantages are similar to 4

1. **Suggestion for improvement**

Weight assignment (use SVD)

**Assessing water quality in rivers with fuzzy inference systems: A case study**

<https://www-sciencedirect-com.libproxy1.nus.edu.sg/science/article/pii/S0160412006000407?via%3Dihub#fd1>

**Prediction of Water Quality Index Using Neuro Fuzzy Inference System**

<https://link-springer-com.libproxy1.nus.edu.sg/article/10.1007%2Fs12403-011-0054-7>

Parameters used to assess water quality are usually correlated and this makes an

assessment unreasonable. Therefore, the parameters are uncorrelated using principal component analysis with varimax rotation (use PCA)

1. **Conclusion**