**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL**

**School of Information Science and Technology**

**Project title: Application of AI in the Detection of Gastroesophageal Reflux Disease (GERD)**

12 **Questionnaire for GERD Diagnosis**

1. Do you experience heartburn?
2. Do you feel bloating in your stomach?
3. Does your stomach feel heavy after meals?
4. Do you find yourself subconsciously rubbing your chest with your hand?
5. Do you feel sick after meals?
6. Do you experience heartburn specifically after meals?
7. Do you notice any unusual (e.g., burning) sensation in your throat?
8. Do you feel full while eating meals?
9. Do you have difficulty swallowing, with some things getting stuck?
10. Do you experience bitter liquid (acid) coming up into your throat?
11. Do you burp frequently?
12. Do you experience heartburn when you bend over?

**Frequency Scale for the Symptoms of Gastroesophageal Reflux Disease (FSSG score) Classification**

* If the FSSG score is between 0 and 7 (inclusive), it indicates **No GERD**.
* If the FSSG score is exactly **8**, it indicates **GERD** (presumably indicating the presence of GERD but at a lower severity level).
* If the FSSG score is between **9 and 18** (inclusive), it indicates **GERD1** (presumably indicating mild GERD).
* If the FSSG score is between **19 and 28** (inclusive), it indicates **GERD2** (presumably indicating moderate GERD).
* If the FSSG score is between **29 and 38** (inclusive), it indicates **GERD3** (presumably indicating moderately severe GERD).
* If the FSSG score is between **39 and 48** (inclusive), it indicates **GERD4** (presumably indicating severe GERD).

**Model Evaluation: Logistic Regression**

**Dataset: 66 Patients, from Tokyo University, Japan**

* Accuracy: **95.65 %**
* Loss: **0.1852**

**Correlation between GERD LEVEL and 12 questions**

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| **Attributes** | **GERD LEVEL** |
| **Getting heartburn while bending over (Q12 of FSSG)** | 0.476457582 |
| **Unusual sensation in the throat (Q7 of FSSG)** | 0.520496832 |
| **Feeling sick after meals (Q5 of FSSG)** | 0.561050218 |
| **Bitter liquid coming up to the throat (Q10 of FSSG)** | 0.573765996 |
| **Feeling full while eating the meals (Q8 of FSSG)** | 0.577515595 |
| **Stomach getting bloated (Q2 of FSSG)** | 0.61152367 |
| **Getting heartburn after meals (Q6 of FSSG)** | 0.636379019 |
| **Burping a lot (Q11 of FSSG)** | 0.645092912 |
| **Rubbing the chest with hands (Q4 of FSSG)** | 0.652334857 |
| **Something getting stuck in swallowing (Q9 of FSSG)** | 0.655276023 |
| **Getting heartburn (Q1 of FSSG)** | 0.662961863 |
| **Stomach feeling heavy (Q3 of FSSG)** | 0.673414754 |
| **Criteria of FSSG score (0: <8, 1: >=8)** | 0.909707694 |
| **FSSG score** | 0.934801644 |
| **GERD LEVEL** | 1 |