**Code**

**Manuscript Title:**

**Medical decision support for Dengue Shock Syndrome using a Bipolar linear Diophantine fuzzy hypersoft model with Trigonometric Similarity**

In the manuscript mentioned above, the authors have not utilized any coding-based software for algorithmic design. However, we have outlined the methodological steps in a general template below. These steps can also be implemented using machine learning tools after being translated into executable code.

**Problem Statement:**

Dengue, particularly Dengue Shock Syndrome, poses a significant public health challenge due to its rapid progression and delayed detection. Early recognition of symptoms such as hypotension, hemorrhagic manifestations, and thrombocytopenia is crucial for timely intervention. Prompt fluid resuscitation, close monitoring, and supportive care play a vital role in reducing mortality and improving patient outcomes. Continued efforts in vector control, early diagnosis, and public awareness are essential in mitigating the impact of dengue worldwide.

To address this challenge, Bipolar Linear Diophantine Fuzzy Hypersoft (BLDFHS) Trigonometric Similarity Measure serves as a diagnostic tool. The universal set consists of three patients X = {X1,X2,X3}, each exhibiting varying degrees of Y1 = hypotension, Y2 = hemorrhagic manifestations, and Y3 = thrombocytopenia, along with their respective attribute values

MY1 = {mild, moderate, severe},

MY2 = {petechiae,purpura, hematemesis},

MY3 = {100,000 - 150,000, 50,000 - 100,000, < 50,000}.

Let u1 = {moderate, purpura, 50,000 - 100,000},

u2 = { mild, petechiae, < 50,000},

u3 = { severe, hematemesis, < 50,000 }.

By computing the similarity measure based on the proposed BLDFHS framework, the diagnostic system will help the Hematologist to compare patient symptoms against known more specific DSS symptom criteria. The proposed method will facilitate:

(i) Rapid and accurate identification of DSS cases.

(ii) Reduction of misdiagnosis and unnecessary delays in treatment.

(iii) A systematic decision-support mechanism to assist in clinical evaluations.

(iv) Lower mortality rates by enabling timely and appropriate medical intervention.

**Methodological steps:**

**Step 1:** Construct BLDFH S Based on Decision-Makers Choices.

**Step 2:** Using the proposed definitions - Cosine Similarity measure for BLDFHS (or) Cotangent Similarity measure for BLDFHS, find the similarity measures

**Step 3:** Rank the alternatives based on the highest similarity value obtained.