DeltaPattern Adaptive Interface Mathematical Formulation

Let:

U = {u_1, u_2, ..., u_n} be the set of user utterances

T = {t_1, t_2, ..., t_k} be the tokenized and lemmatized vocabulary extracted from U

f(t) be the frequency function of token t in T

E(t) be the embedding vector of token t

Step 1: Token Signature Vector

S = (f(t_i) * E(t_i)) / f(t_i), for all t_i in T

S is the weighted average embedding representing user's communication pattern

Step 2: Contextual Similarity

Given input I with embedding vector E_I,

similarity_score = cosine_similarity(S, E_I)

Step 3: Behavioral Alignment Condition

If similarity_score threshold ,

Phase-Stable Mode Activated

Result:

Model response generation R follows:

R = f_response(I, S), where behavior is modulated by S

This ensures response modulation based on associative-tokenized memory vector S.

Note:

This is a simplified version of ATM-driven behavior alignment for LLMs.