

## Claims

A continuous reweighting system for a machine learning model, comprising:

A data acquisition module configured to capture streaming data with associated credibility metadata;

A preprocessing module to normalize and tokenize the streaming data;

An adaptive reweighting module employing an online optimization algorithm to compute weight updates based on the preprocessed data;

A content differentiation module designed to distinguish between opinion-based content and verifiable, action-backed statements, and to assign factuality scores to data inputs;

An audit verification module configured to compare generated outputs with trusted reference data and provide feedback for corrective reweighting;

A monitoring and control loop configured to evaluate model performance and trigger the adaptive reweighting module when performance metrics or factual accuracy deviate from predefined thresholds;

An update and deployment engine for applying the updated weights to a live model.

The system of claim 1, wherein the adaptive reweighting module further comprises a regularization mechanism designed to mitigate catastrophic forgetting by incorporating historical data from a memory buffer.

The system of claim 1, wherein the content differentiation module includes:

An opinion detection submodule that utilizes natural language processing to identify subjective language markers;

A fact-based analysis submodule that cross-references content with external verified sources to confirm the presence of objective, action-backed data;

A factuality scoring mechanism that influences the weighting of data during the reweighting process.

The system of claim 1, wherein the audit verification module comprises:

A reference comparator that accesses a controlled repository of authoritative data;

A discrepancy detector that identifies deviations between generated outputs and reference data;

A feedback integrator that communicates discrepancies to the adaptive reweighting module for corrective updates.

A method for continuously reweighting a machine learning model with integrated content differentiation and output validation, comprising:

Continuously acquiring streaming data with associated credibility metadata;

Preprocessing the acquired data to generate structured feature representations;

Analyzing the preprocessed data to differentiate between opinion-based content and verifiable factual statements by assigning factuality scores;

Computing gradients of a loss function based on the fact-verified data and current model weights;

Updating the model weights using an online optimization algorithm that applies the computed gradients;

Continuously generating outputs and validating these outputs against a trusted reference repository using an audit verification module;

Monitoring the performance of the updated model using predefined performance and factual accuracy metrics;

Deploying the updated model weights if the performance metrics and factual accuracy verifications meet or exceed predetermined thresholds.

The method of claim 5, further comprising the step of storing historical data in a memory buffer to be used for regularization during the weight update process.