

Provisional Patent Draft: Video-AI Motion Diagnostic System

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Title of Invention

Video-AI Motion Diagnostic System for Plumbing Evaluation

Field of the Invention

This invention relates to artificial intelligence systems for diagnosing the quality and safety of plumbing installations, specifically through the analysis of short video recordings or motion bursts. It enhances accuracy by leveraging temporal visual data, which offers greater context than single-frame image analysis.

Background of the Invention

Conventional photo-based diagnostic tools for evaluating plumbing rely on static images submitted by users. This approach often fails to capture dynamic issues such as vibration, flexing, minor leaks, or momentary pressure events. A single image lacks the temporal resolution necessary to detect many real-world problems. This invention introduces a method of using short videos to generate more reliable AI-based diagnostics through frame selection, motion-based inference, and multi-angle analysis.

Summary of the Invention

The invention provides an AI-based diagnostic system that analyzes short video clips or motion bursts submitted by users. The system extracts key frames from the video to evaluate indicators of plumbing quality, such as solder integrity, movement, water behavior, and installation stability. The system outputs a diagnostic score and may tag specific moments in the video that indicate risk or superior craftsmanship.

Key Claims

1. A video-based AI diagnostic engine for evaluating plumbing work based on motion footage rather than single images.
2. Frame extraction logic that selects key still frames from a video sequence for targeted diagnostic

analysis.

3. Motion-inference logic that detects anomalies such as vibration, pipe flex, micro-leaks, or bounce under pressure.
4. A context-enhanced scoring system that combines multi-angle visual cues and temporal metadata.
5. Timestamp and motion-event tagging to highlight significant moments for technician or homeowner review.
6. Integration into existing photo-based plumbing diagnostic platforms such as NeuraPlumb for hybrid analysis.
7. Applicability across plumbing, HVAC, and other home service inspections using smartphone or wearable cameras.

Method of Operation

The system prompts users to submit a short video clip (e.g., 3-10 seconds) of a plumbing installation or problem area. The AI engine processes the video by extracting a series of frames and evaluating each for predefined craftsmanship or defect indicators. The engine calculates a NeuraScore or other rating metric based on the combination of motion cues and frame data. Key frames or moments of interest are tagged, and a report is generated for client or technician review.