ADAPTIVE STATE FILTER FOR AUDIO PROCESSING

UNIVERSITY OF ALASKA FAIRBANKS

CASE ID: UA 129-09

BACKGROUND

Cleaning up audio recordings often involves removing unwanted noise artifacts like clicks, pops, or other sharp transients. Traditional filters can struggle with these issues—either failing to remove the noise or unintentionally altering the desired audio content. There is a need for more intelligent post-processing tools that can restore older or lower-quality recordings while preserving sound integrity.

DESCRIPTION

The inventor created a system, method, and computer program that function as an adaptive, nonlinear filter known as a "State Filter." It works by analyzing the signal's characteristics and dynamically adjusting its behavior to suppress unwanted transients without degrading the underlying sound. Unlike many existing tools, it does not require manual segmentation or labeling of the audio and is optimized for post-processing rather than real-time use. This makes it especially well-suited for restoring field recordings, analog tape, or other archival audio sources.

ADVANTAGES

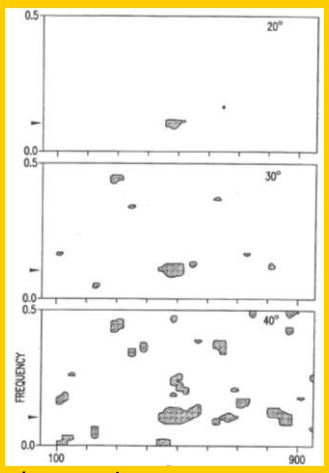
- Suppresses clicks, pops, and other unwanted transients
- Preserves fidelity of the original audio
- Adaptive nonlinear filtering improves accuracy
- No need for manual audio segmentation

APPLICATIONS

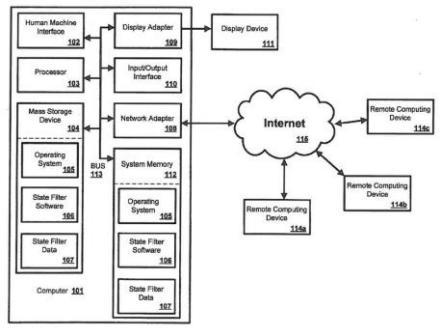
- Restoration of archival or analog recordings
- Audio post-production and remastering
- Field recording cleanup for research or media
- Tools for libraries, museums, and historical archives

INTELLECTUAL PROPERTY

- Patent #8554816



The detector's response over frequency and time for three acceptance angles, with dark areas showing detected signals and dotted lines marking the wave's temporal region.



A block diagram illustrating an exemplary operating environment for performing the disclosed methods.

INVENTORS

John V. Olson

CONTACT

David Park
dspark@alaska.edu
907.474.2605