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21 April 2025

Testing/ Bug Report

With my guitar, I used real-time audio input through effects chain (delay, distortion, reverb, filter), visualizer animation, preset loading, and noise gate functionality.

Testing Results

- Audio Input: Successful
- Effects Processing: Delay, feedback, filter, and reverb respond correctly to knob controls
- Distortion: Works dynamically based on user settings
- Visualizer: Responds smoothly to live audio input
- Preset Loading: All 4 presets load expected settings
- Noise Gate: Reduces background noise, allows performance dynamics
- Dry/Wet Mix: Dry signal improves responsiveness

Bugs or Issues Found:

- Small latency depending on browser performance
- Noise gate needed tuning to balance strumming sensitivity
- Minor cosmetic lag if browser window is resized
- Trying to load a preset before starting audio caused a TypeError because the delay object was not yet initialized
- After clicking "Stop Audio," the noise gate's monitorInput() function was still trying to access audioCtx.currentTime, causing a TypeError because audioCtx was set to null.

Fixes:

- Smoothed out noise gate by adjusting threshold and ramp times
- Balanced dry/wet signal to improve guitar responsiveness
- Added safeguard to prevent crash after stopping AudioContext
- Updated monitorInput to check if audioCtx exists before trying to use it, preventing crashes after the audio context closes.
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Future Improvements:

- Build a full VST plugin version
- Add soft-knee compression after distortion
- Support MIDI input for controlling parameters

All major functionality works as intended. Shoegaze Machine successfully processes live guitar input in real time..