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## Real-time Timbral Mapping for Synthesized Percussive Performance

Q: How can differentiable digital signal processing (DDSP) be extended to support timbre transfer of non-harmonic percussive instrument tones? A: Two problems with DDSP for non-harmonic percussive tones are: frequency estimation using gradient descent and transients. We address these using hybrid architectures that augment DDSP with neural audio synthesis.

What methodologies can we employ to extract salient performance features from percussive audio in real-time and dynamically map them to controls of a synthesizer to enable nuanced control over timbre?

