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The HITar, an augmented guitar for percussive fingerstyle with DNN body hit description

We built an acoustic guitar prototype that uses a soft classifier to control the parameter space of a synthesis engine in real time. The embeddings (last layer before the output layer) are regularised so that they act as a low-dimensional latent space, providing a deeper description than the output layer of the classifier. System latency is ~13 ms.

Usability evaluation: How do players behave with it? Does the re-synthesised sound match the expectation of the player? Does the richer representation carry the subtle differences across hits normally present in expressive playing?