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Efficient Bayesian inference for multiple pitch estimation of music audio

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Multiple pitch estimation consists of estimating the number of active notes and their fundamental frequencies on each time frame of a music signal. This is a core problem for several applications, including score transcription and source separation. Bayesian harmonic models are a promising approach, since they allow the joint exploitation of various priors on the model parameters. However existing Bayesian inference methods often rely on specific prior distributions and remain computationally demanding for realistic data. We propose a generic inference method based on adaptive factorization of the joint posterior that allows the application of such models to real-world data. We evaluate the results for the task of multiple pitch estimation using different levels of factorization.