

## SEMIGROUP SPECTRAL KERNELS ON MEASURES

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We present in this poster a new family of positive definite kernels to compare positive measures on Euclidian spaces. These kernels focus on the variance matrix of the mixture of two measures to compute their similarity. Such kernels are semigroup kernels in the sense that they only use the sum of two measures to compare them, taking advantage of the semigroup structure of positive measures. They are also spectral functions since their value only depends on the eigenspectrum of the variance matrix of the mixture. We show that the family of semigroup spectral kernels on measures has close bonds with the characteristic functions of the cone of positive semidefinite matrices endowed with different base measures, and we present some closed formulas that can be derived as special cases of a more general integral expression. Such kernels can be applied with kernel machines such as the SVM to compare complex objects through their respective histogram of smaller components, considering texts as bags of words or sequences as bags of substrings for instance.