

AAAI 2025

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Regarding the MOGP manuscript, assuming you keep the kernel decomposition perspective, I have 2 main concerns which I hope you have evidences and results to address them when we talk tomorrow.

☐ Scope

- Kronecker product decomposition and addition (quasi-linear) for MOGP and HGP
- Spectral mixture kernel and stationarity
 - Input dependent kernel learning
- Effective kernel of hierarchical models, including DGP
 - The moment perspective

☐ Dataset perspective as matching applications

- How are datasets used to manifest the gist of the manuscript

Spectral Mixture Kernels for Multi-Output Gaussian Processes

A classical approach to define cross-covariances for a MOGP is to linearly combine independent latents GPs, this is the case of the Linear Model of Coregionalization (LMC [3]) and the Convolution Model (CONV, [4]).

While these approaches are simple, they lack interpretability of the dependencies learnt and force the auto-covariances to have similar behaviour across different channels.

The LMC method has also inspired the Cross-Spectral Mixture (CSM) kernel [5], which uses the Spectral Mixture (SM) kernel in [6] within LMC and model phase differences across channels by manually introducing a shift between the cosine and exponential factors of the SM kernel.