

Multi-task Gaussian Process Prediction (Poster ID W20)

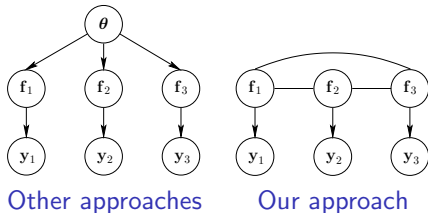
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We propose a model based on a GP prior that directly induces correlations between tasks specified by a task-similarity matrix K^f .

1. The Model:

$$\langle f_\ell(\mathbf{x}) f_m(\mathbf{x}') \rangle = K_{\ell m}^f k^x(\mathbf{x}, \mathbf{x}') \\ y_{i\ell} \sim \mathcal{N}(f_\ell(\mathbf{x}_i), \sigma_\ell^2).$$

- Observations in one task affect predictions on the others.

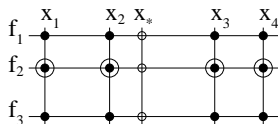


2. Predictions:

$$\bar{f}_\ell(\mathbf{x}_*) = (\mathbf{k}_\ell^f \otimes \mathbf{k}_*^x)^T \Sigma^{-1} \mathbf{y}, \\ \text{with } \Sigma = K^f \otimes K^x + D \otimes I$$

3. Cancellation of Transfer:

Noiseless observations + grid:



4. Results:

Compiler task, school data

