

MASTER'S THESIS PRESENTATION

Variational Bayes for Linear Inverse Problems

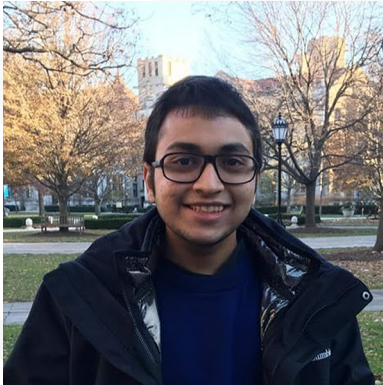
WHEN

May, 6th, 2021
2:30 PM, CDT

WHERE

Via ZOOM

ZOOM information will be provided in the email announcement for this seminar.



Shiv Agarwal, MS candidate

We present a Variational Bayesian approach for solving linear inverse problems. The inverse problem is formulated as a hierarchical Bayesian model with gamma hyper priors, which has been introduced and analyzed in the literature for sparse underdetermined systems. Despite the Bayesian motivation for the hierarchical model, previous work has only considered MAP estimation, and the potential to perform uncertainty quantification has not yet been realized.

Variational Bayesian methods are a popular technique for approximating intractable posterior distributions. Using the general framework of Variational Bayes, we introduce a variational iterative alternating scheme (VIAS) for this model. The proposed variational inference approach is flexible, easy to implement and globally convergent. Several computed examples illustrate both the accuracy of our methodology and its ability to provide meaningful uncertainty quantification.

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