Neural Networks
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Autoencoders
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EM Algorithm
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Variational Autoencoders
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Variational Autoencoders
A Deep Generative Model

Ayush Raina, Anushka Dassi, Arnav Bhatt

Indian Institute of Science

April 4, 2024

Neural Networks in Supervised Setting

Neural Networks
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Autoencoders
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EM Algorithm
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Variational Autoencoders
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Autoencoders

Encoders vs Principal Component Analysis(PCA)

Neural Networks
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Autoencoders
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EM Algorithm
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Variational Autoencoders
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Expectation Maximisation Algorithm

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Autoencoders
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EM Algorithm
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Variational Autoencoders
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Problems with EM Algorithm

Solution 1: Markov Chain Monte Carlo EM Algorithm

Solution 2: Variational Inference

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EM Algorithm
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Variational Autoencoders
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Mean Field Assumption in Variational Inference

Co-ordinate Descent vs Gradient Descent

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Setting up the problem

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Variational Autoencoders
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Ammortized Inference

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Gradient Descent

Reparametrization Trick

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Variational Autoencoders
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Summary