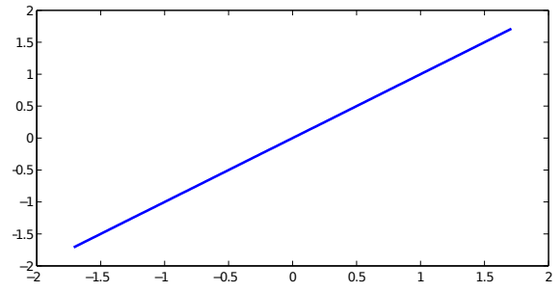
Encode prior assumptions (e.g. dynamics [5]) or place observed inputs (supervised learning)

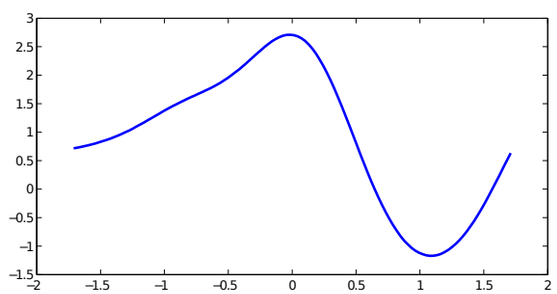


$$\mathbf{X}_H = \left[\mathbf{x}_H^{(1)}, \dots, \mathbf{x}_H^{Q_H}\right]$$

$$f_{H-1}$$

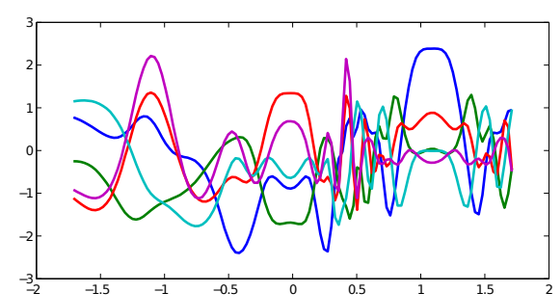
$$\bullet\bullet\bullet$$

$$f_1$$



$$\mathbf{X}_1 = \left[\mathbf{x}_1^{(1)}, \dots, \mathbf{x}_{(1)}^{Q_1}\right]$$

$$f_0$$



$$\mathbf{X}_0 = \left[\mathbf{x}_0^{(1)}, \dots, \mathbf{x}_0^{Q_0}\right]$$

Hidden variables ($\mathbf{X}_H$ can also be observed)

Single layer: equivalent to the GP-LVM [1]

Observed outputs

$$f_h \sim \mathcal{GP}\left(\mathbf{0}, k_h(\mathbf{X}_h, \mathbf{X}_h)\right)$$