Sessions

Session 1 (today): Bayesian recap

Exercise: Bayesian histogram tuning curve fits

Session 2: linear models
Topics: linear-Gaussian models, priors as regularizers

Session 3: generalized linear models #1
Topics: LNP neurons, single-neuron GLMs, IF neurons

Session 4: generalized linear models #2
Topics: GLMs for neural populations, decoding with GLMs

Exercise: GLMs

encoding & decoding

$p(\boldsymbol{y}|\boldsymbol{x})$
&
$p(\boldsymbol{x}|\boldsymbol{y})$

Session 5: Dimensionality reduction
Topics: PCA, probabilistic PCA & Factor Analysis, TCA

latent encoding
$p(\boldsymbol{x}|\boldsymbol{z})p(\boldsymbol{z})$

Session 6: State space models #1
Topics: Laplace approx., Expectation Maximization, Variational Bayes

Session 7: State space models #2
Topics: Gaussian processes

Exercise: GPFA? (TBD)

Session 8: State space models #3
Topics: Artificial neural networks

latent dynamic encoding

$p(\boldsymbol{x}_t|\boldsymbol{z}_t)p(\boldsymbol{z}_t|\boldsymbol{z}_{t-1})$

Session 9: Paper discussion & wrap-up