

Bayesian Neural Networks, Uncertainty Quantification



CREATIS

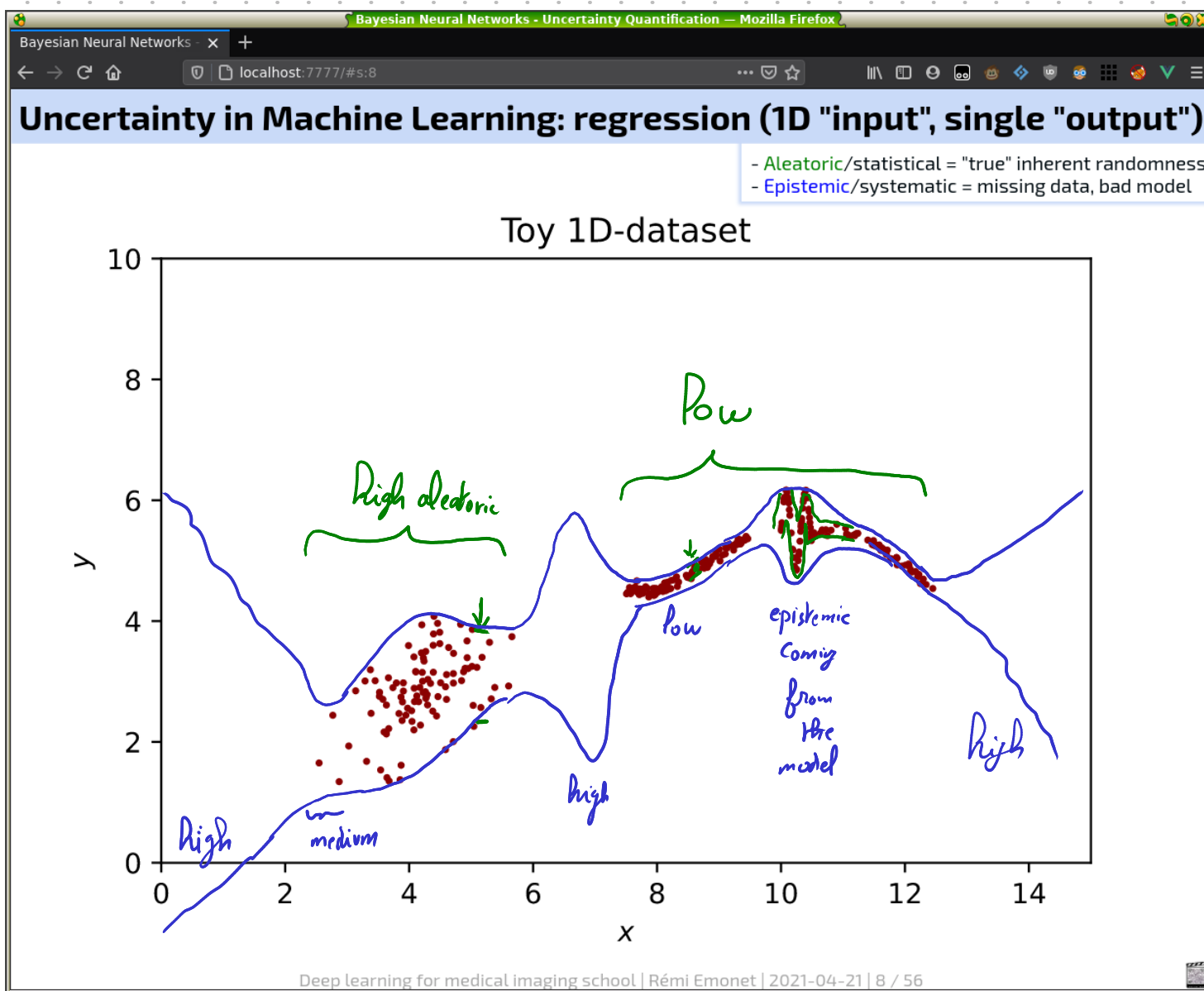


(slides)



School on Deep Learning
for Medical Imaging

2021-04-21
Rémi Emonet
(remote event)



- Aleatoric/statistical = "true" inherent randomness
- Epistemic/systematic = missing data, bad model

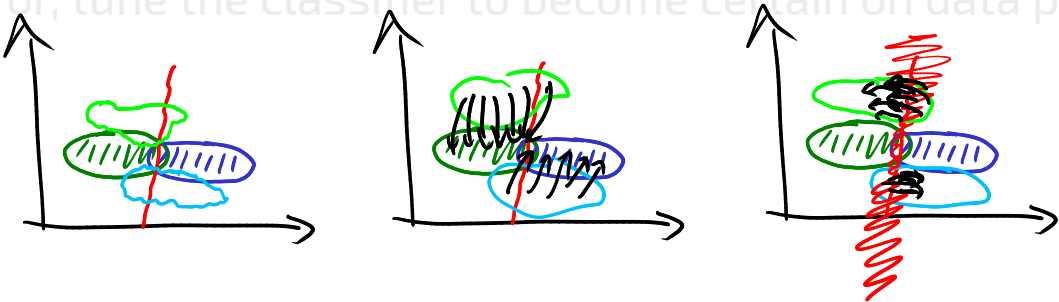
The figure is a scatter plot in a 2D space with axes x_1 (horizontal) and x_2 (vertical). The x_1 axis ranges from -10.0 to 10.0, and the x_2 axis ranges from -6 to 6. There are two main clusters of data points: one consisting of orange 'x' marks and another consisting of blue dots. The orange 'x' marks are primarily located in the upper-left and lower-left regions, while the blue dots are concentrated in the lower-right region. Blue contour lines are drawn around the data points, indicating the decision boundary between the two classes. Two green ellipses are overlaid on the plot: one encircles a small group of orange 'x' marks and blue dots in the upper-right area, and the other encircles a group of orange 'x' marks in the lower-middle area.

Bayesian Neural Networks - x + Bayesian Neural Networks - Uncertainty Quantification — Mozilla Firefox

localhost:7777/#s:19

Dataset Shift, Domain Adaptation, Transfer Learning (not today's focus)

- Dataset shift
 - the "target" set is different from the training set
 - out of distribution situation
 - .
- Solution
 - Unsupervised domain adaptation (UDA)
 - use unlabeled target data to adapt
 - Usual approach
 - reduce the discrepancy between source and target datasets
 - a natural fit for the Optimal Transport theory
 - or, tune the classifier to become certain on data points



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