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Abstract

Quantifying uncertainty in machine learning models

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Abstract:

We'll see why and how it is very important to compute uncertainty in inferential statistics and predictive machine learning models.

1) Deep dive in random forest

Random Forest gives us naturally an estimation of the distribution for each sample thanks to the bagging technic.

2) Generalisation for regression

The quantile loss is useful to compute prediction intervals for every regression model. It is however a computationally costly. Certain loss like cosh can help against this con.

3) What about classification

In classification, probability is a measure of the uncertainty... but does every models give us good probabilities ? Let plot some reliability curve to check if we need to calibrate the output with a sigmoid a an isotonic regression !

Conclusion: pros and pros of presented technics. Opening with the new framework tensorflow probability

Related work:

https://blog.octo.com/les-intervalles-de-prediction/

Biography:

Samuel Rochette work as a data scientist at OCTO Technology in Paris since 2016. He focuses on mathematical modeling for industrial use cases, and bring data science to production. He previously worked on a visual inspection platform with deep learning for the quality of

different pieces in industrial plants. He also worked on embarked deep learning model on a raspberry, interpretation of black box models and research of uncertainty.

Publication of speakers:

1. Samuel Rochette, Modulation of the yeast protein interactome in response to DNA damage, Journal of Proteomics, Volume 100, 4 April 2014, Pages 25-36
2. Samuel Rochette, Integrative avenues for exploring the dynamics and evolution of protein interaction networks, Current Opinion in Biotechnology, Volume 24, Issue 4, August 2013, Pages 775-783
3. Samuel Rochette, Transcriptional divergence plays a role in the rewiring of protein interaction networks after gene duplication, Journal of Proteomics, Volume 81, 9 April 2013, Pages 112-125
4. Samuel Rochette, Effects of alirocumab on cardiovascular and metabolic outcomes after acute coronary syndrome in patients with or without diabetes: a prespecified analysis of the ODYSSEY OUTCOMES randomised controlled trial, the lancet diabetes & endocrinology, Volume 7, Issue 8, August 2019, Pages 618-628

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