Optimization, learning and high-dimensional macroscopic limits

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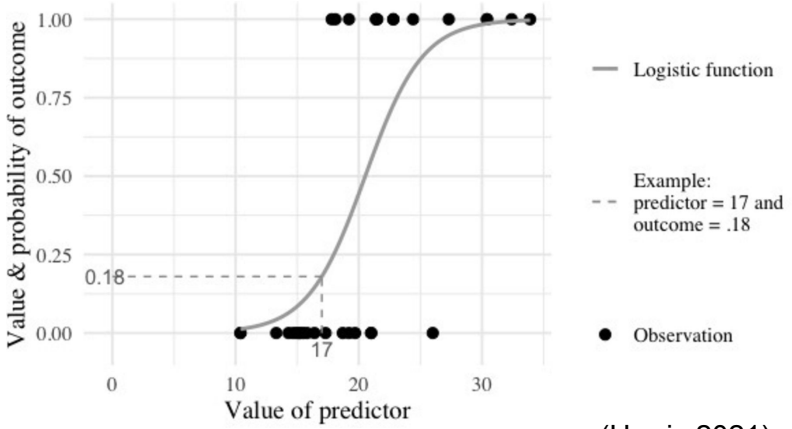
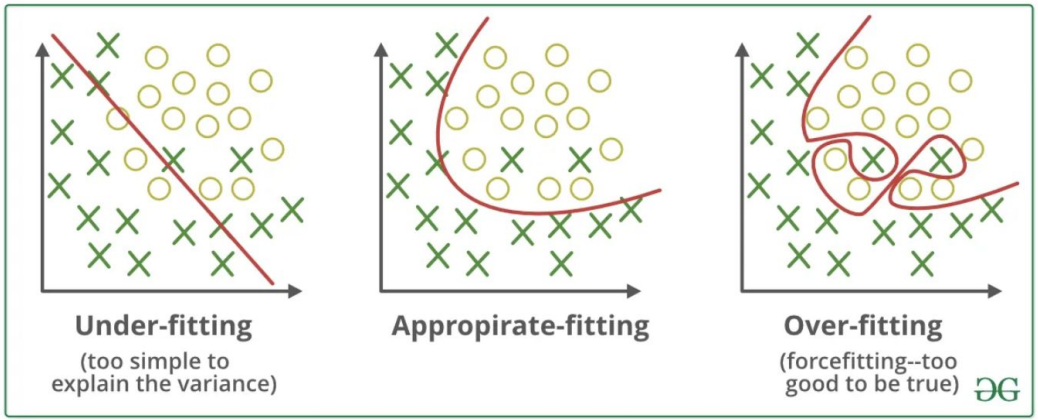
Previous works

- Logistic Regression: models binary outcomes
  - Ex: Patient diagnosis (Salahi et al., 2019)
  - Regularization: adding a penalty to prevent overfitting
- When p fixed and n → ∞, MLE has nice properties (e.g. unbiased)
- In high dimensions, properties break down for unregularized, L_1 and L_2 regularized logistic regression (Candès & Sur, 2018; Salahi et al., 2019)



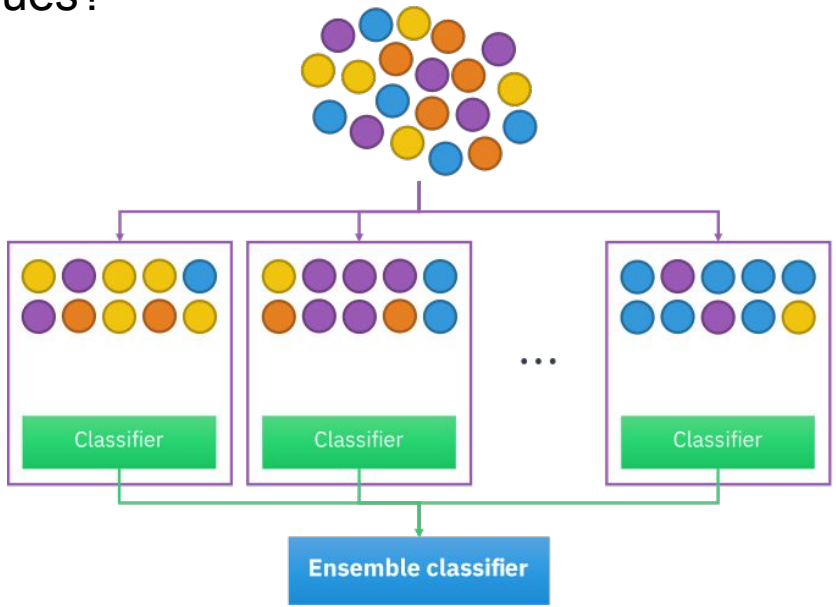
(Harris 2021)



(Karas 2023)

Looking ahead + Goals

- Understand and replicate results from previous work
  - Generate data set and compute log reg estimates
  - Specifically relating to L_2 regularized log reg
- How can we mitigate these issues?
  - Bagging



(Lamyai, 2014)

Works Cited and Acknowledgements

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Acknowledgements:

This work was carried out as a part of the 2023 DIMACS REU program at Rutgers University, supported by NSF grant CNS-2150186

Thank you to my mentor Pierre Bellec for his time and guidance throughout!