UNIVERSITÀ DEGLI STUDI DI TRIESTE

SMOTE VARIANT FOR UNBALANCED DATA IN CLASSIFICATION PROBLEMS

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Content

- Introduction to the problem
- Data generation / Assessment method
- SMOTE-DIRICHLET
- Results

Data Generation Process

Parameter	Values	Description
n_{train}	250, 1000, 5000	Train set size
n_{test}	250	Test set size
π	0.1, 0.05, 0.025	Proportion of rare examples

Table: Parameters of the simulation

$$(\mathbf{X}, y) \text{ s.t. } \begin{cases} \mathbf{X} \sim N_2\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}\right) & \text{if } y = 0, \\ \mathbf{X} \sim N_2\left(\begin{pmatrix} 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 & -0.5 \\ -0.5 & 1 \end{pmatrix}\right) & \text{if } y = 1. \end{cases}$$

Data Generation

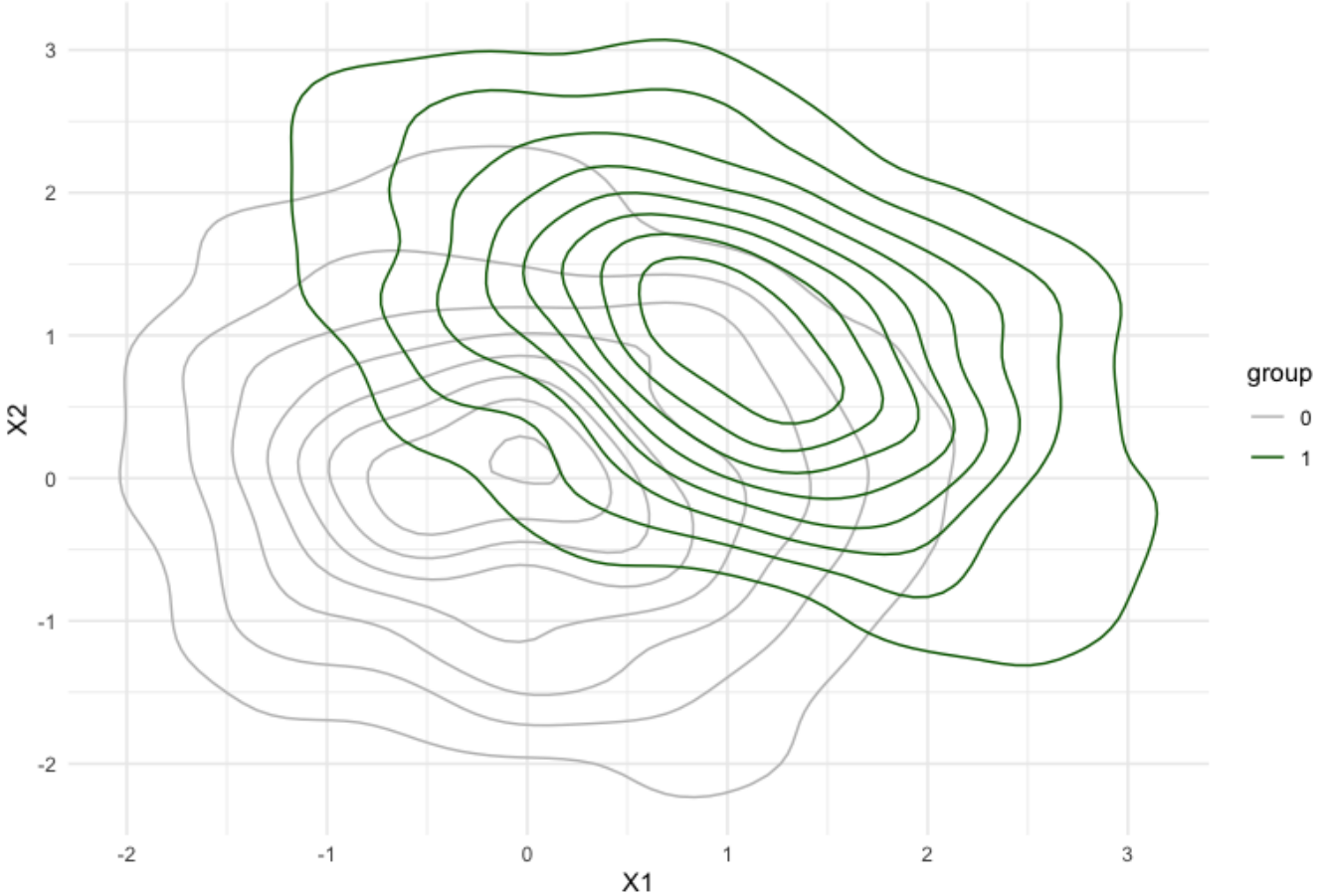

Figure: Contour plot of the data distribution

References

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