Machine learning: basi e sue applicazioni

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Main topics

- **Machine learning and the «data life cycle»**
- **Validation and classification metrics**
- Feature extraction
- Feature selection
- ML classifiers

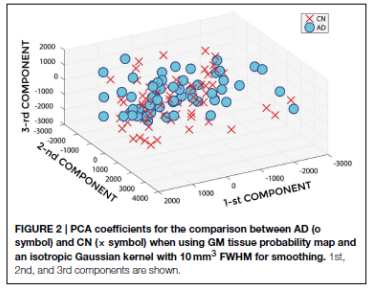

FIGURE 2 | PCA coefficients for the comparison between AD (o symbol) and CN (× symbol) when using GM tissue probability map and an isotropic Gaussian kernel with 10 mm^3 FWHM for smoothing. 1st, 2nd, and 3rd components are shown.

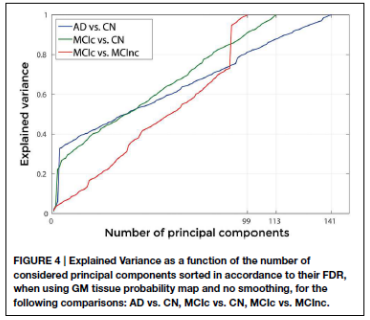

FIGURE 4 | Explained Variance as a function of the number of considered principal components sorted in accordance to their FDR, when using GM tissue probability map and no smoothing, for the following comparisons: AD vs. CN, MCIc vs. CN, MCIc vs. MCInc.

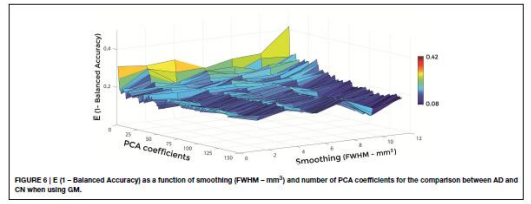

FIGURE 6 | E (1 – Balanced Accuracy) as a function of smoothing (FWHM – mm^3) and number of PCA coefficients for the comparison between AD and CN when using GM.

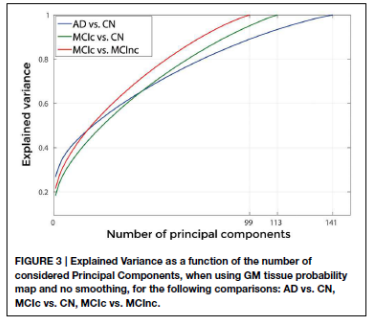

FIGURE 3 | Explained Variance as a function of the number of considered Principal Components, when using GM tissue probability map and no smoothing, for the following comparisons: AD vs. CN, MCIc vs. CN, MCIc vs. MCInc.

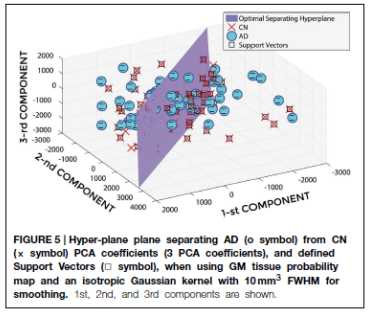

FIGURE 5 | Hyper-plane plane separating AD (o symbol) from CN (× symbol) PCA coefficients (3 PCA coefficients), and defined Support Vectors (□ symbol), when using GM tissue probability map and an isotropic Gaussian kernel with 10 mm^3 FWHM for smoothing. 1st, 2nd, and 3rd components are shown.

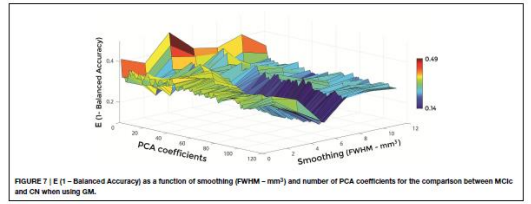

FIGURE 7 | E (1 – Balanced Accuracy) as a function of smoothing (FWHM – mm^3) and number of PCA coefficients for the comparison between MCIc and CN when using GM.

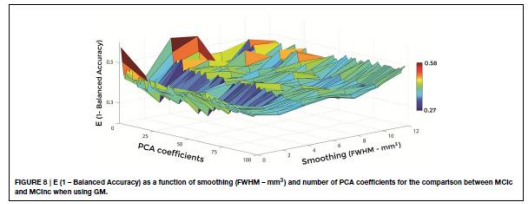

FIGURE 8 | E (1 – Balanced Accuracy) as a function of smoothing (FWHM – mm^3) and number of PCA coefficients for the comparison between MCIc and MCInc when using GM.

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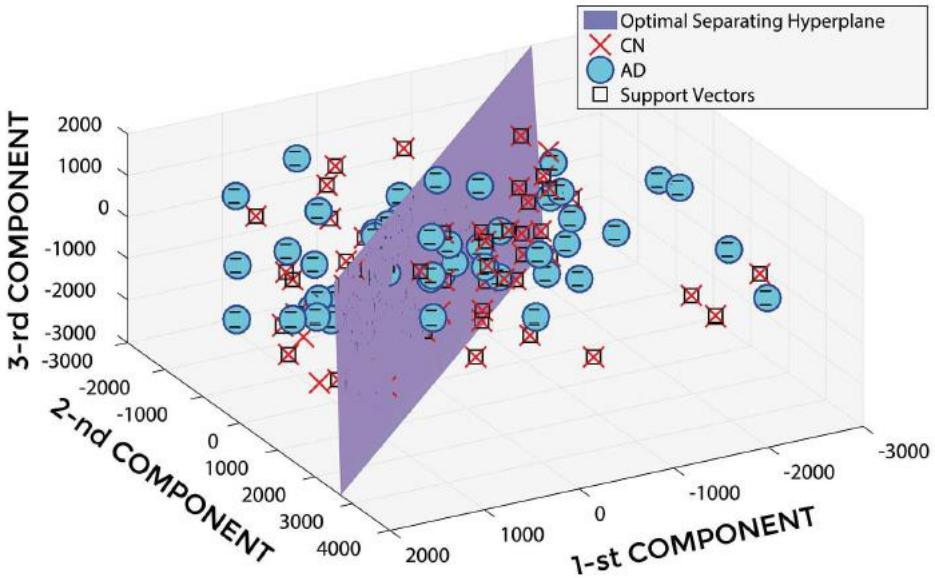

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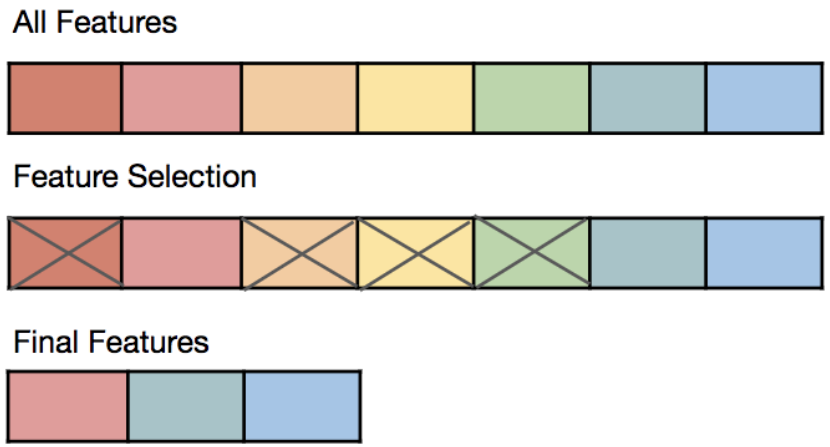

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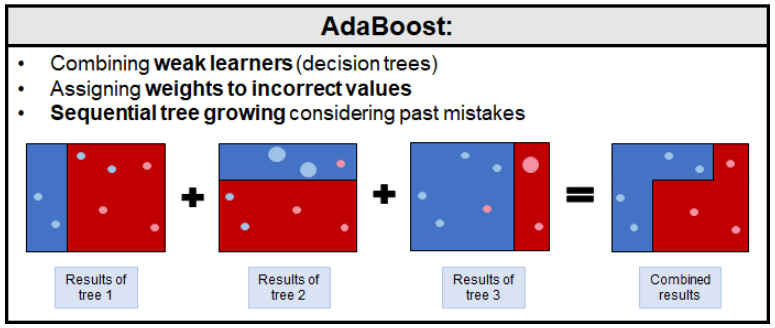

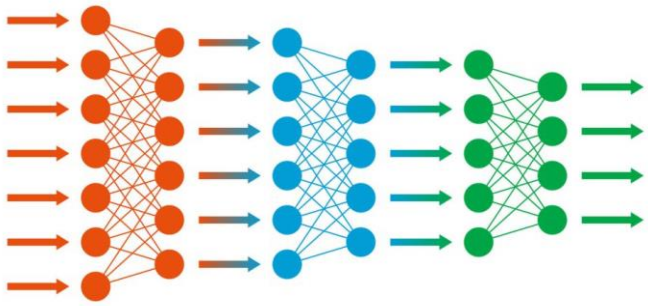

Requirements

- Basic skills of coding (Matlab)

- Updates @ https://christiansalvatore.github.io/machinelearning-iusspavia