

## Different chemometric approaches to monitoring pesto sauce quality in an industrial process

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Nowadays, companies are increasingly required to improve the control of industrial processes, in order to ensure a product of high and uniform quality and to reduce wastes for more environmentally friendly products. To this aim, thanks to the modern technological progresses, companies can install an increasing number of different type of sensors along the industrial plant. The huge amount of data generated can be analysed with chemometric tools to improve the efficiency of process monitoring and to predict the final product quality.

Pesto Barilla, a sauce obtained by a mixture of basil, garlic, parmesan cheese, extra-virgin olive oil and other ingredients, is one of the most important food products of the company. The main ingredient of pesto sauce is basil, which has an important impact on the features of the pesto sauce (Nicoletto et al., 2013; Strani et al., 2022). For this reason, an accurate monitoring on the early stage of the process, where the basil plants enter in the production line.

Basil plants were analysed with an RGB camera that has been installed on the conveyor belt, able to extrapolate in real-time information about the colour of plants and detect if there are some defects, such as dark spots on the leaves. In addition, spectra of an intermediate product, i.e. grinded plants mixed with oil and garlic, were collected by an on-line NIR probe. The final product quality was assessed by off-line laboratory analysis.

In this work, the focus has been on the real-time prediction of final pesto quality, using NIR and Imaging data for the computation of regression and classification models. In this context, were evaluated different data fusion strategies as well as different multiblock methods.

**Keywords:** NIR, Basil, RGB imaging, Data Fusion, Process Monitoring.

### REFERENCES

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