CLAIMS

1. A portable apparatus configured to perform non-destructive taste profiling of a food, the portable apparatus comprising:

a receptacle configured to move a sample of the food in a volumetric sampling space, in which the sample includes the food in a non-homogenized form;

a source configured to direct light towards the volumetric sampling space;

an optical device having an input port and an output port, the input port being configured to sense reflectance from at least a part of the sample in the volumetric sampling space, the optical device being configured to output a component of the reflectance through the output port; and

a detector coupled to the output port, the detector being configured to convert the component of the reflectance into captured data, the captured data being characterized by an overtone spectrum; and

a computing device coupled to the detector, the computing device being configured to: execute at least one first machine learning model using the captured data as input, the at least first machine learning model being configured to:

predict at least one facet corresponding to at least one selected wavelength from the overtone spectrum; and

predict a signature data characteristic based on a plurality of the at least one facet, wherein the signature data is characteristic of a taste of the food.

2. The portable apparatus of claim 1, wherein the computing device is further configured to execute at least one second machine learning model using the signature data as input, the at least one second machine learning model being configured to:

predict at least one descriptor; and

predict a signature characteristic of the food using the at least one descriptor.

3. The portable apparatus of claim 2, wherein the signature is an independent variable, and wherein the at least one descriptor is a dependent variable.

4. The portable apparatus of claim 2, wherein the at least one first machine learning model includes an unsupervised machine learning model, and wherein the at least one second machine learning model includes a supervised machine learning model.

5. The portable apparatus of claim 2, wherein the receptacle is configured to be rotatable, and wherein the computing device is further configured to output the signature in about 5 seconds from initiating rotation of the receptacle.

6. The portable apparatus of claim 2, wherein the at least one second machine learning model is configured to predict a blend intended to have a taste associated with the food, and wherein the blend has a composition of ingredients different from a composition of the food.

7. The portable apparatus of claim 2, wherein the at least one second machine learning model is configured to predict a variant and/or a category of the food.

8. The portable apparatus of claim 1, wherein the receptable is configured to move relative to the source and/or the optical device to define the volumetric sampling space.

9. The portable apparatus of claim 1, wherein the optical device is configured to remove spatial information from the reflectance.