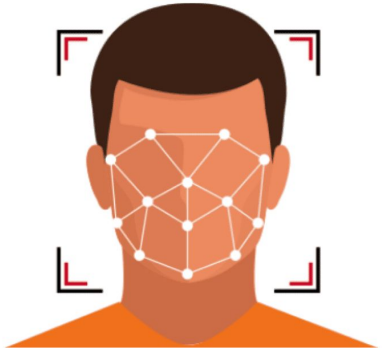
Supervised Learning

Supervised Learning

- In supervised learning, the user provides the algorithm with pairs of inputs and desired outputs.
- The algorithm finds a way to produce the desired output given an input.
- In particular, the algorithm is able to create an output for an input it has never seen before.

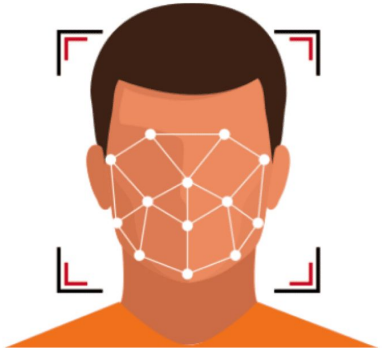
Spam Filter Example

- The user provides the algorithm with a large number of emails (which are the **input**) together with information about whether any of these emails are spam (which is the desired **output**).



Spam Filter Example

- Given a new email, the algorithm will then produce a prediction as to whether the new email is spam.



Supervised Learning

- Algorithms in machine learning that learn from pairs of input and output are termed **supervised learning** algorithms.

- A "teacher" guides these algorithms by supplying the desired outputs for each example they learn from.

- Although creating a dataset with input-output pairs can be a meticulous manual task, supervised learning algorithms are well-established, and their performance is straightforward to assess.

Examples of Supervised Learning

- Identifying the zip code from handwritten digits on an envelope
- Determining whether a tumor is benign based on a medical image
- Detecting fraudulent activity in credit card transactions