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What is Machine Learning?

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Machine Learning

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What is machine learning?

- Learning from the data through algorithms/models

Types of machine learning

- **Supervised**: “building a statistical model for predicting, or estimating, an **output** based on one or more **inputs**”
  - **output**
    - exists in the data
    - similar to what we know as Dependent Variable
- **Unsupervised**: No output in the data. Models to learn the patterns in the data. Outputs might be generated by the model

Where to get output in supervised learning

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- Maybe it already a part of the dataset
- It could be expensive to get the output data
  - Benoit et al (2016)
  - Anastasopulos and Bertelli (2019)
  - Manifesto data
    - Subamanian et al (2018)
- Who to code the data
  - Using cloud workers?

Unsupervised machine learning: Examples

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- Clustering
- Dimension reduction
  - Principal Component Analysis
  - Scaling
    - Twitter followership network (Barbera, 2014)
- Text analytics
  - text scaling without pre-coded output
    - wordfish (Proksch and Slapin, 2008)
  - topic modeling
  - dictionary based sentiment classification (could be supervised)

Supervised machine learning, illustration

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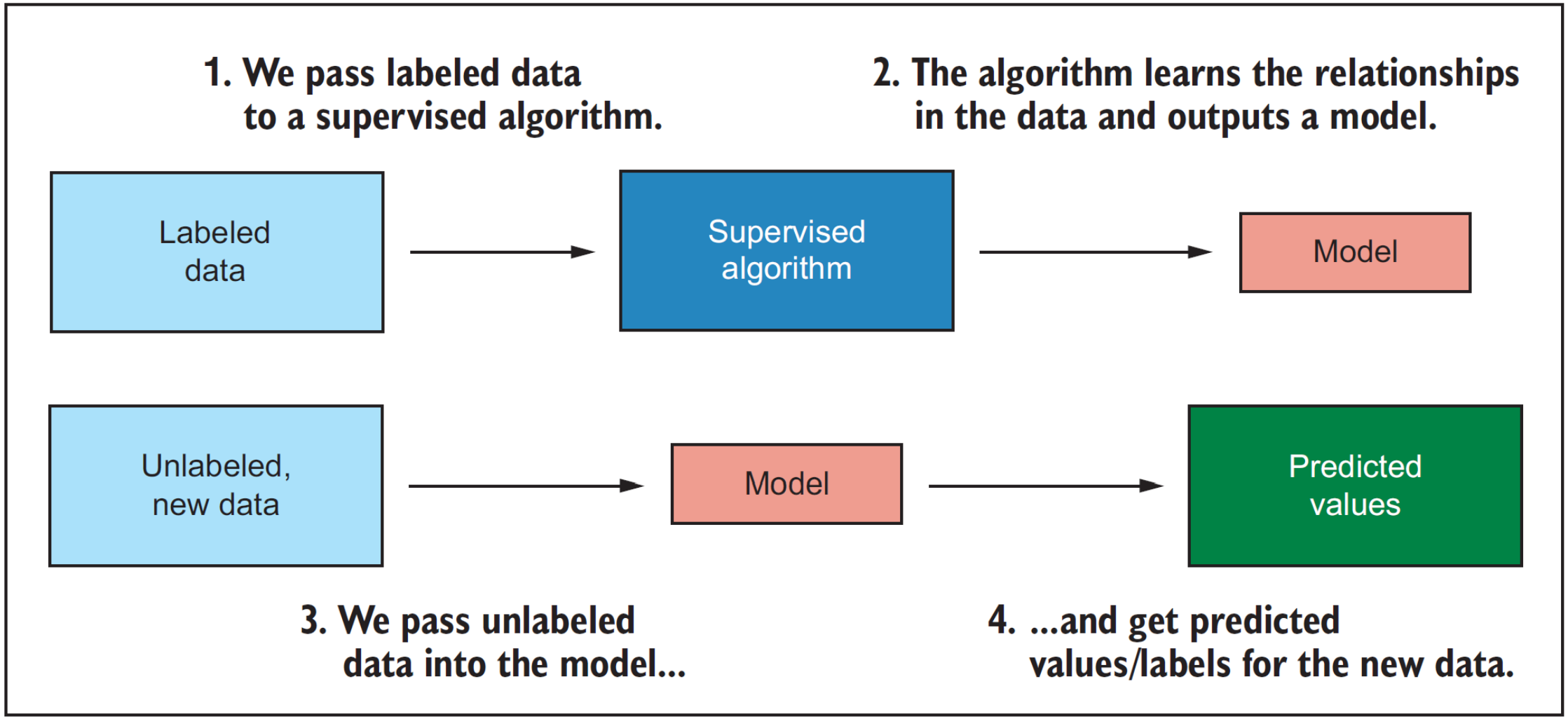

From Rhys, Machine Learning with R, the tidyverse, and mlr, 2020

Unsupervised machine learning, illustration

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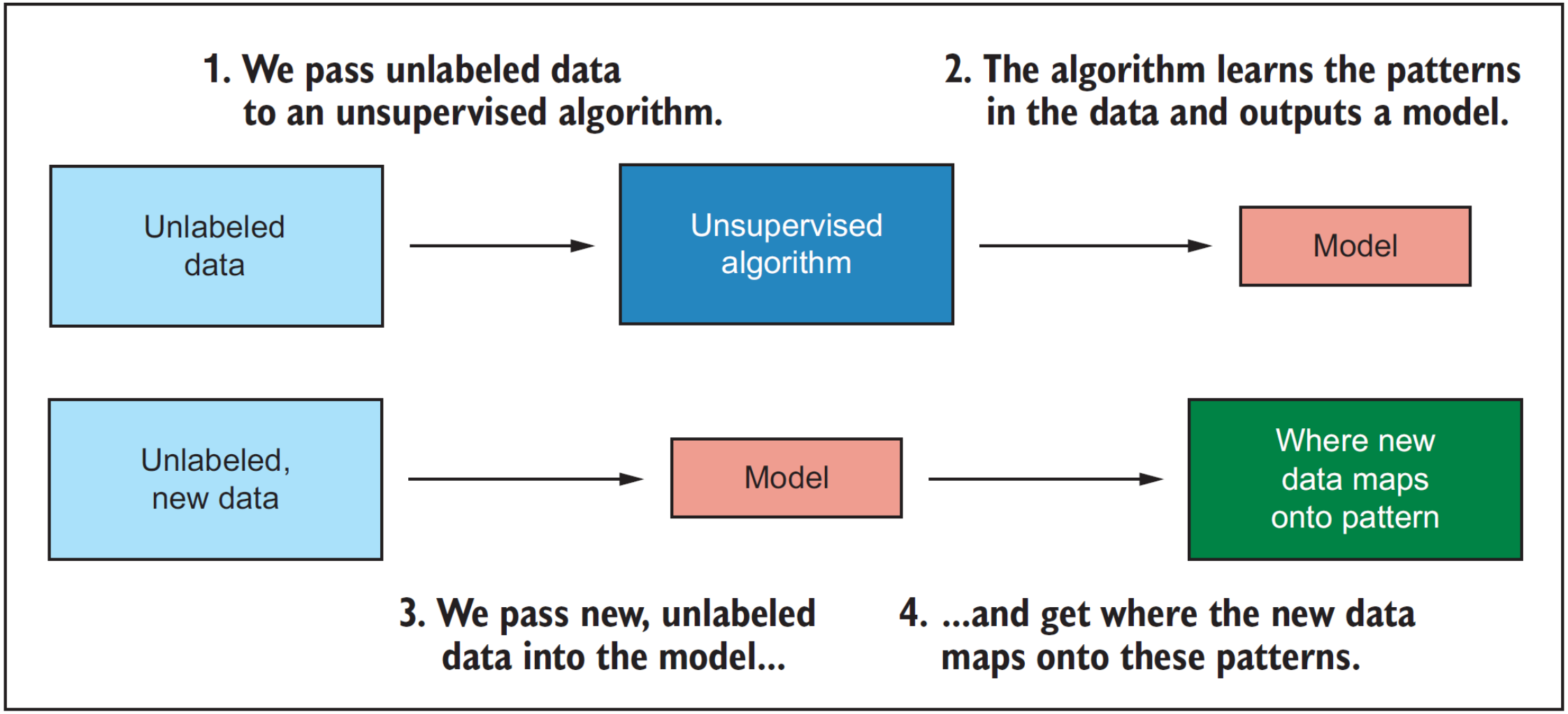

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