Azure Machine Learning

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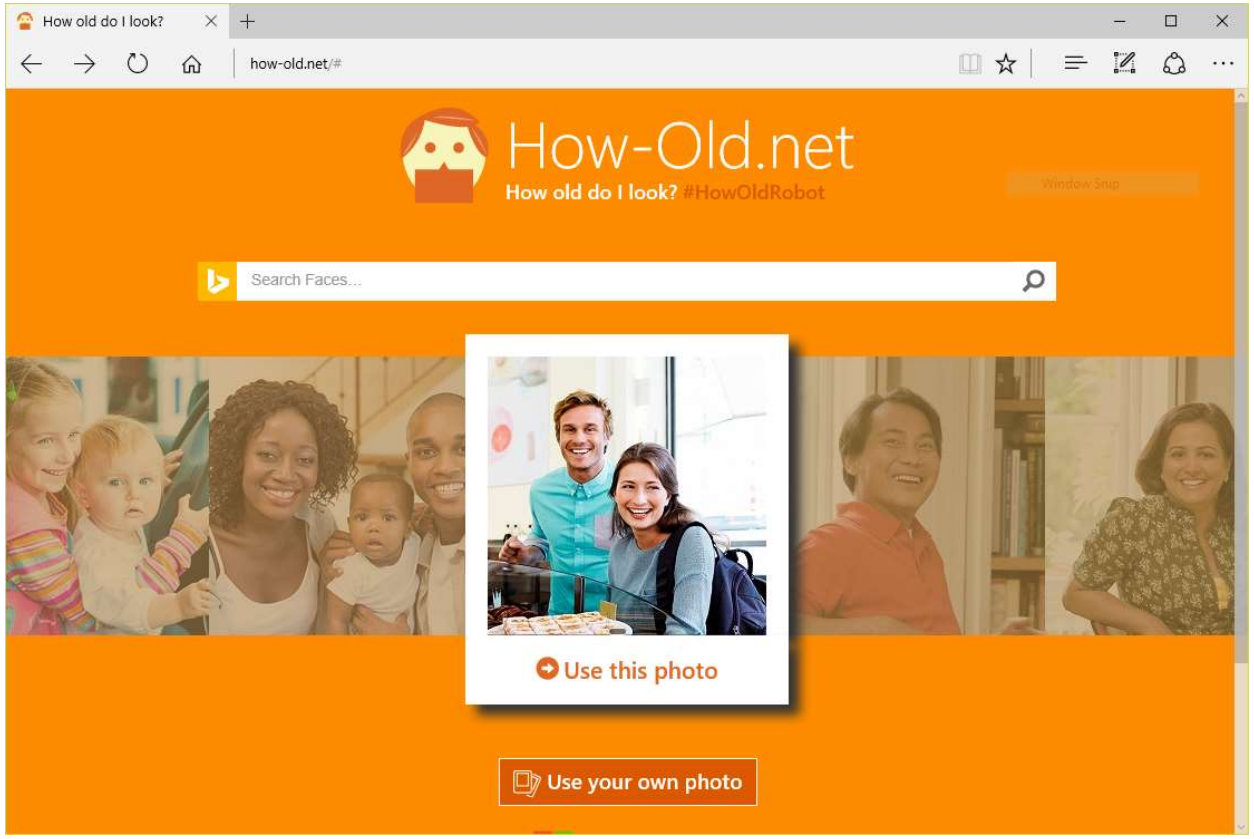
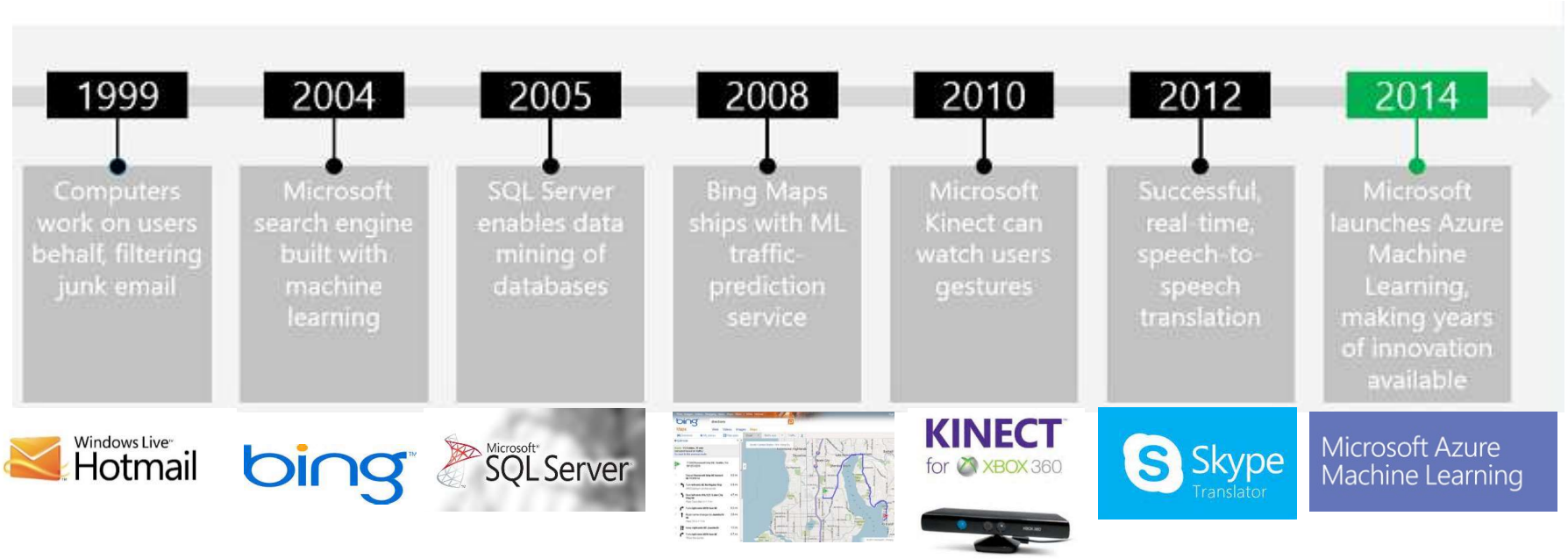
What is Machine Learning?

- Branch of computer science in which a computer "learns" from data in order to perform predictive analytics
  - Credit-card fraud detection
  - Online shopping recommendations
  - Self-driving cars and more
- Supervised learning
  - Regression and classification
- Unsupervised learning
  - Clustering

Machine Learning in Action



Microsoft and Machine Learning



Modified from http://pulsweb.fr/predict-wine-quality-azureml

Azure Machine Learning

- Fully managed cloud service for building and operationalizing ML models

Fully managed

No software to install, no hardware to manage, and one portal to view and update.

Integrated

Simple drag, drop and connect interface for Data Science. No need for programming for common tasks.

Best in Class Algorithms + R

Built-in collection of best of breed algorithms. Support for R and popular CRAN packages.

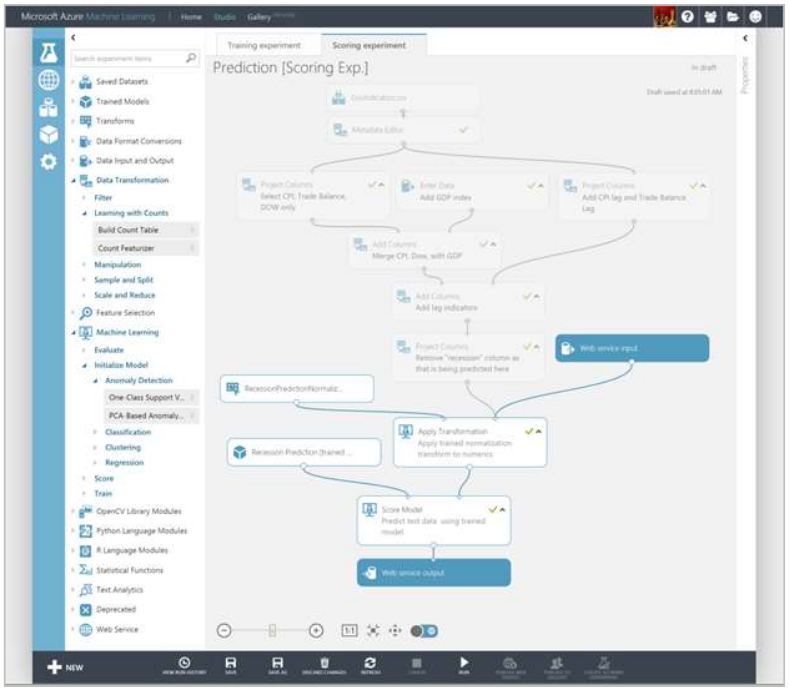
Deploy in minutes

Operationalize models with a single click. Monetize in Machine Learning Marketplace.

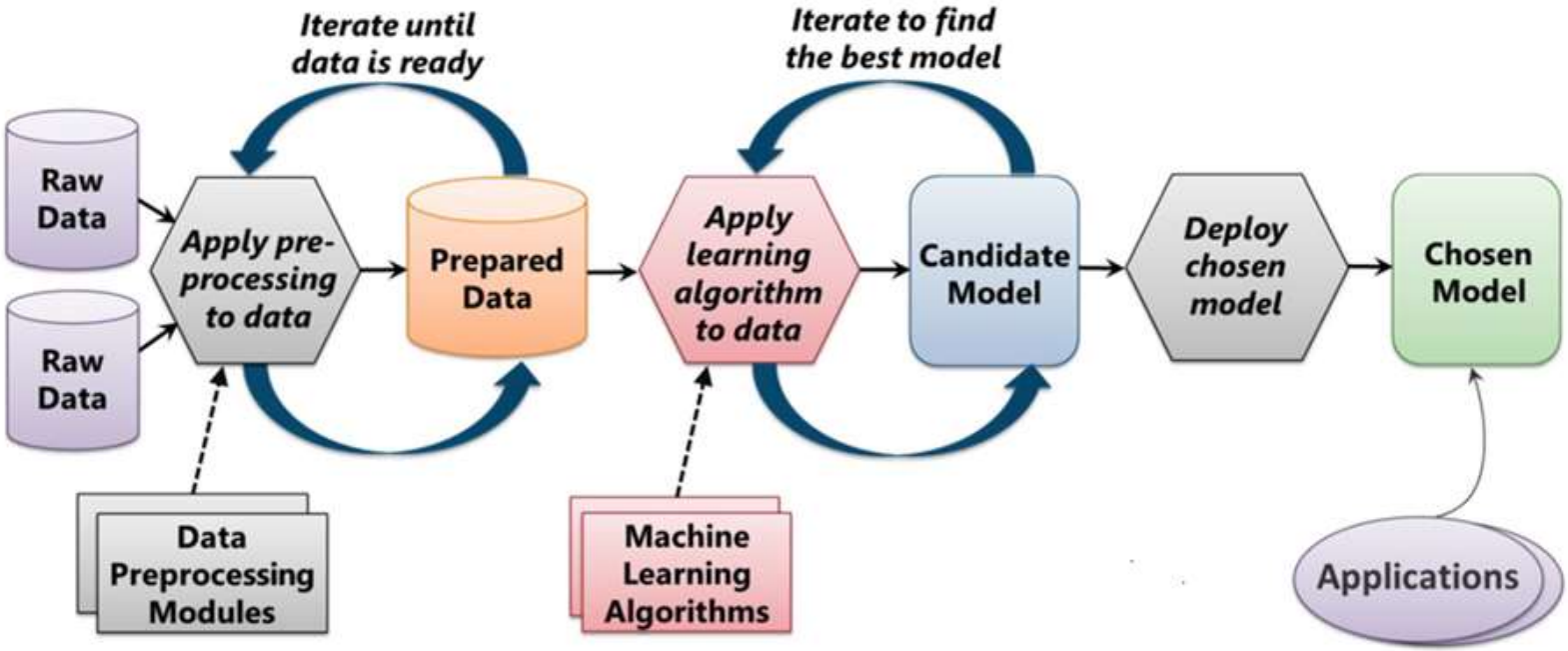
“I spent last semester building a regression model in Python, and I just did the same thing in 10 minutes with Azure ML”

Azure Machine Learning Studio

- Visual editor for composing, testing, refining, and deploying machine-learning models
  - Includes hundreds of modules
  - Includes common algorithms for classification, regression, and more
  - Supports numerous input formats
  - Supports R and Python
- Machine learning for the masses

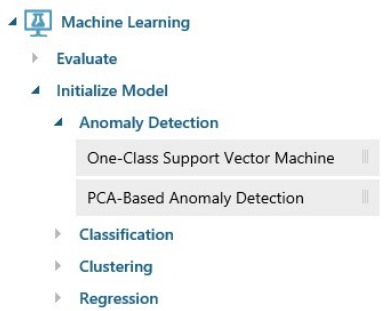


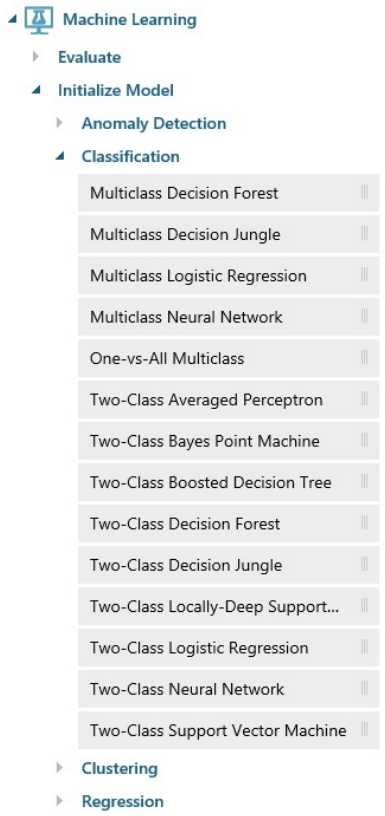
The Machine Learning Process

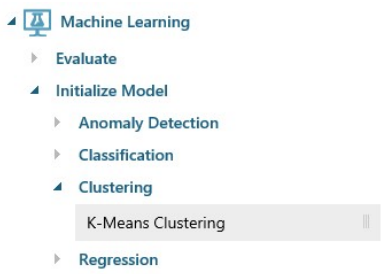


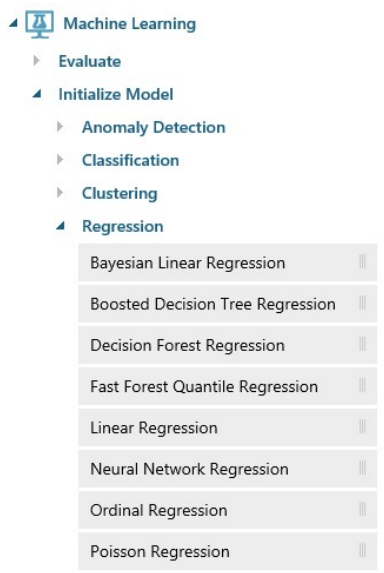
From "Introduction to Microsoft Azure" by David Chappell

Azure Machine Learning Algorithms



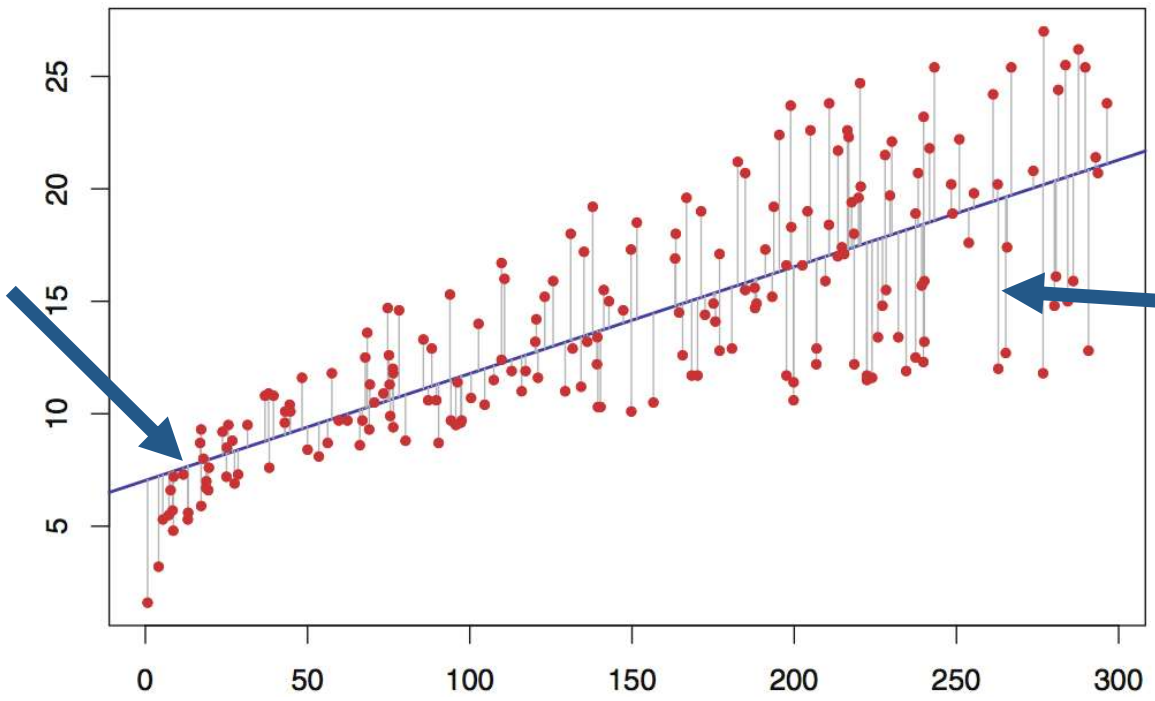




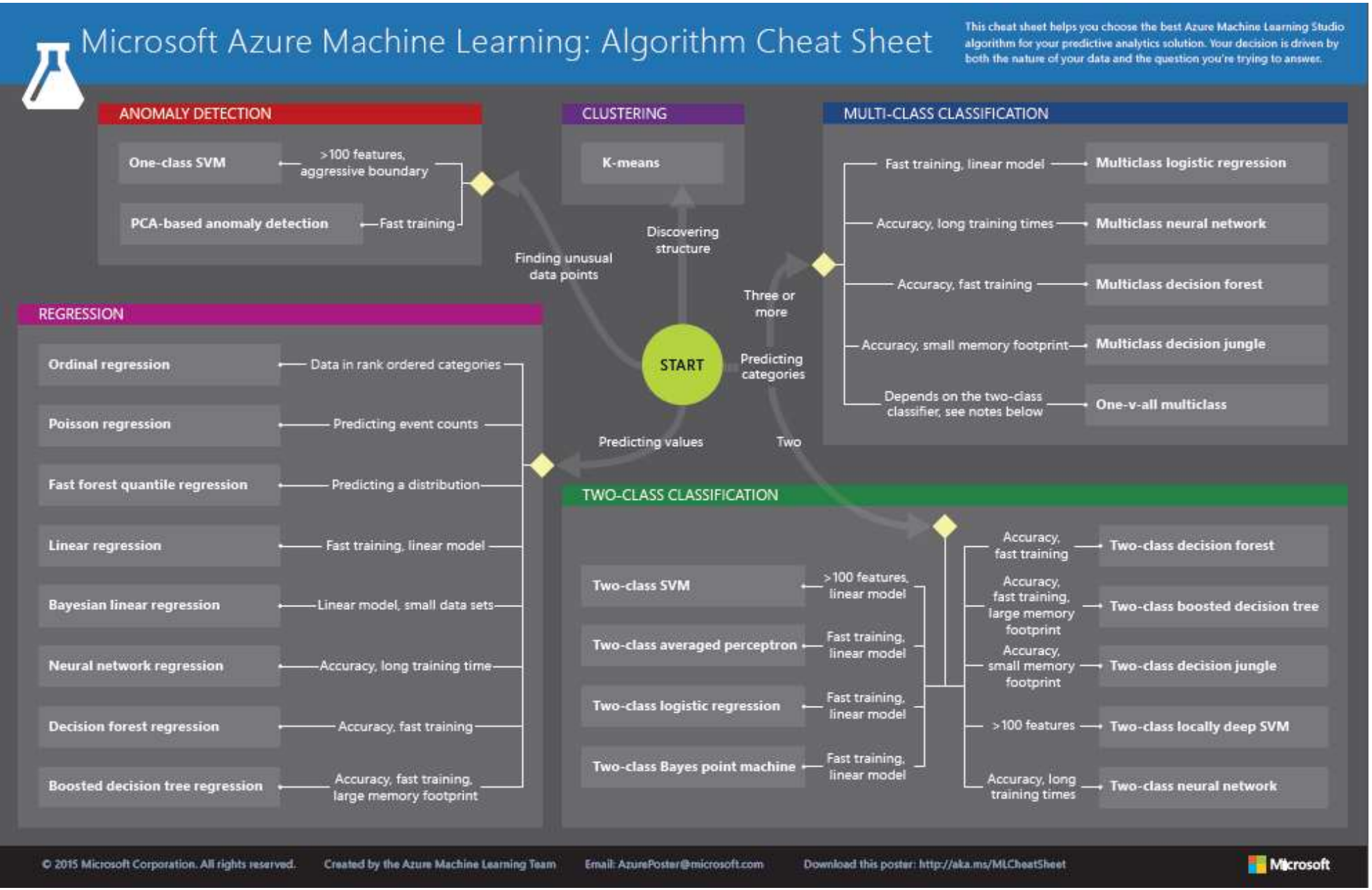


Simple (Univariate) Linear Regression

Regression line represented by an equation of the form $Y = b_0 + b_1X$ where Y is the dependent variable



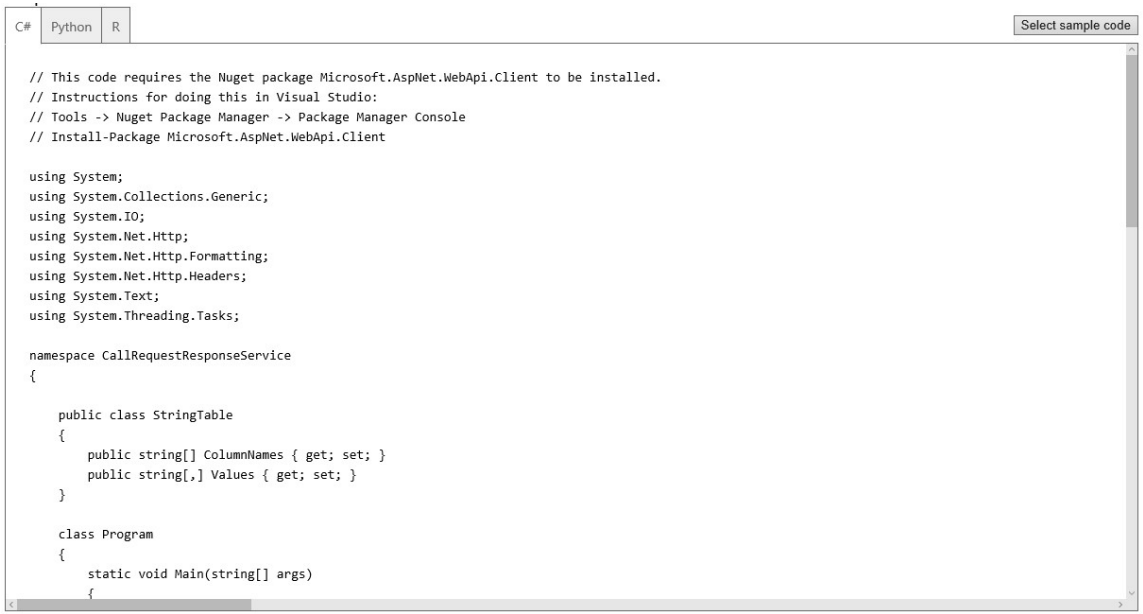
Error between actual and computed output minimized using least-squares or gradient-descent method



http://aka.ms/MLCheatSheet

Deploying as a Web Service

- A button click in ML Studio deploys a model as a Web service and provides sample code for calling it in three languages



Free e-Book

http://bit.ly/a4r-mlbook

Microsoft Azure

Hands-On Lab

Azure Machine Learning HOL.html