Machine Learning in the Elastic Stack

Dr Stephen Dodson, Tech Lead, Machine Learning
Sophie Chang, Team Lead, Machine Learning

segmentation
entity-extraction
artificial-intelligence
feature-selection
education
supervised
forecasting
marketing
manufacturing
categorization
anomaly
eclat
pca
k-means
svm
ensemble
churn
marketing
IT-Ops
random-forest
nlp
healthcare
time-series
recurrent
hmm
self-driving-car
utilities
knn
speech-to-text
optimization
support
chatbot
decision-tree
quantile
dbm
insurance
multivariate
clustering
machine
learning
apriori
elastic
risk
go
svm
life-science
retail
fraud
deep-learning
financial
x-pack
hierarchical
gaussian
unsupervised
sensor-data
k-means
classificaiton
linear-regression
operations
logistic-regression
native-bayes

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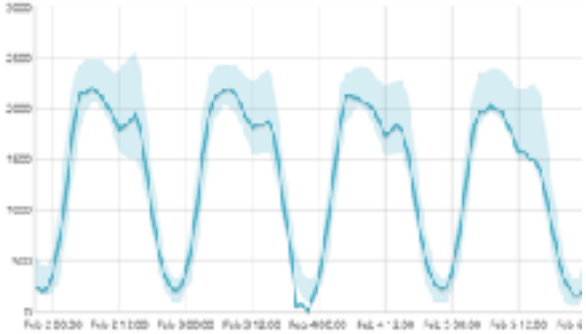
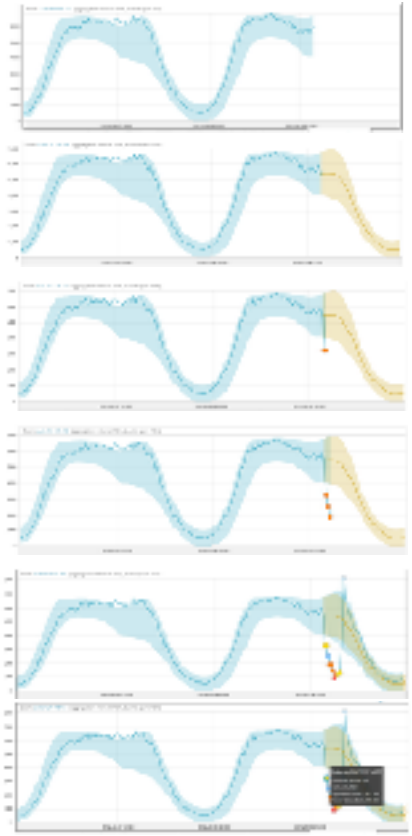
Learn



Predict



Operationalise

The Anatomy of Machine Learning

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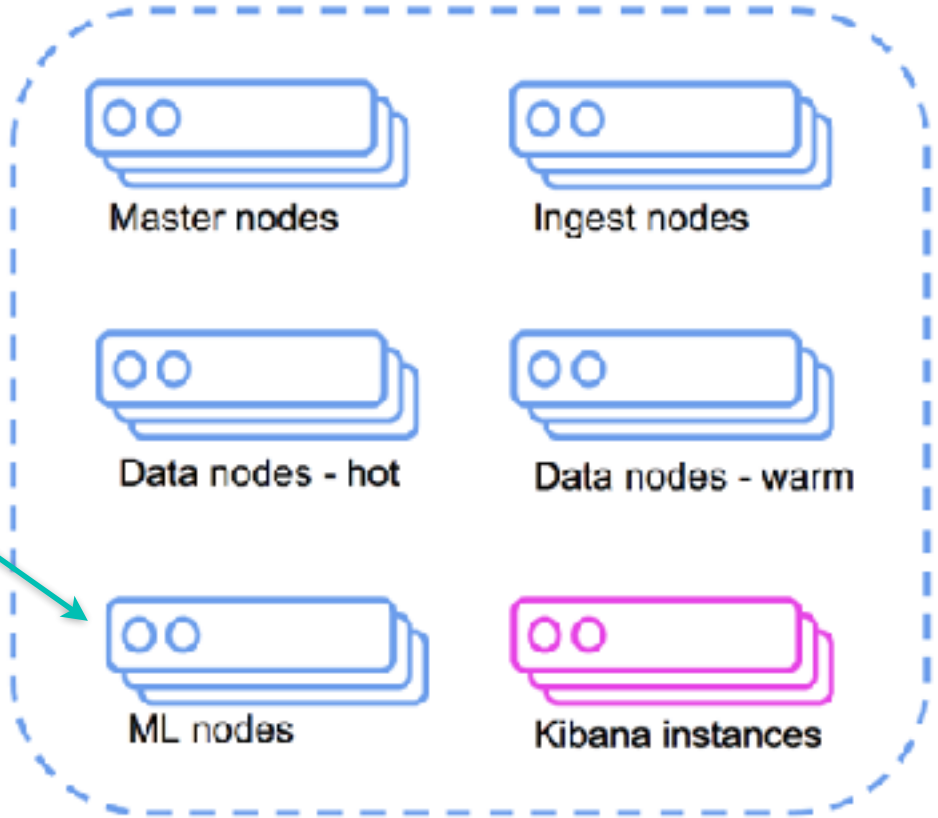
Production architecture

Job
- bucket span
- function

Datafeed
- search



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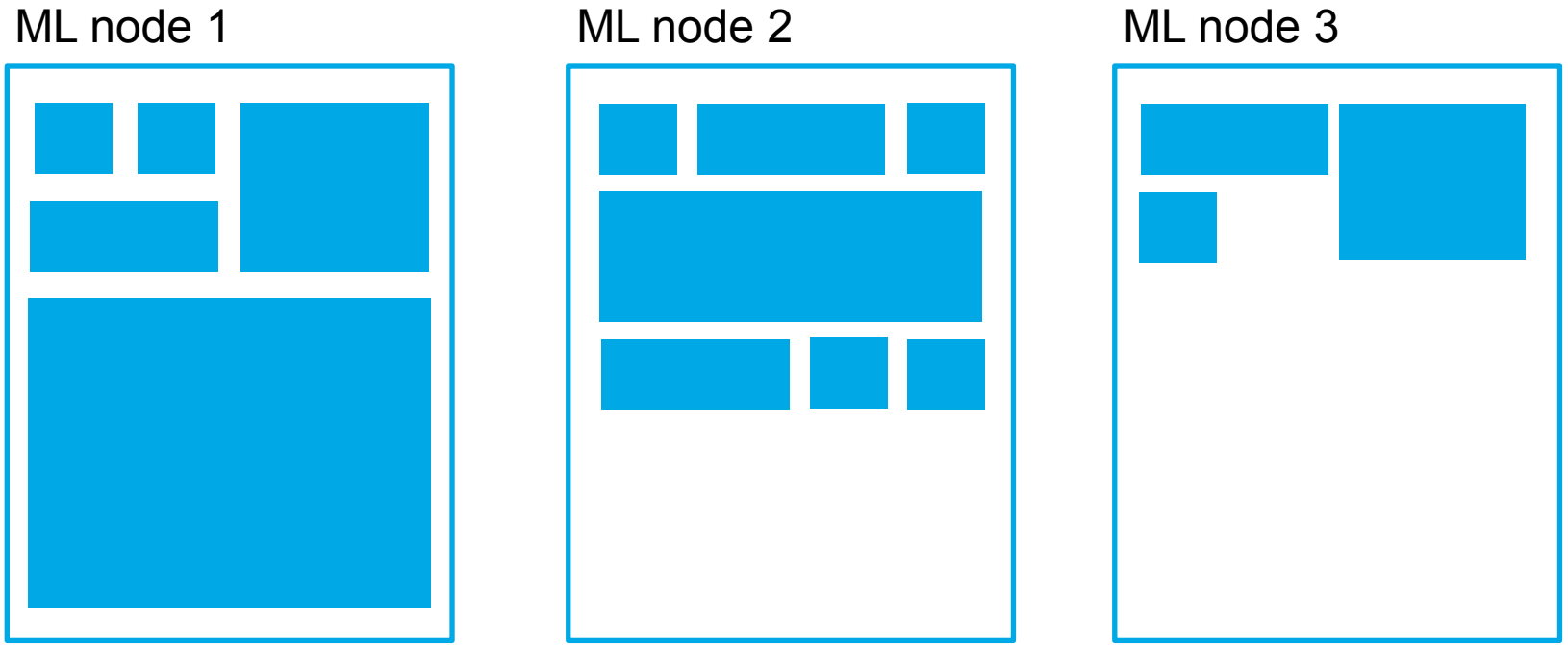
Smart job placement



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Machine Learning Demo

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Multidimensional Outlier Detection

Online Retail Data

InvoiceNo	StockCode	Description	Quantity	InvoiceDate	UnitPrice	CustomerID	Country
536368	22912	YELLOW COAT RACK PARIS FASHION	3	01/12/10 08:34	4.95	13047	United Kingdom
536368	22914	BLUE COAT RACK PARIS FASHION	3	01/12/10 08:34	4.95	13047	United Kingdom
536369	21756	BATH BUILDING BLOCK WORD	3	01/12/10 08:35	5.95	13047	United Kingdom
536370	22728	ALARM CLOCK BAKELIKE PINK	24	01/12/10 08:45	3.75	12583	France
536370	22727	ALARM CLOCK BAKELIKE RED	24	01/12/10 08:45	3.75	12583	France
536370	22726	ALARM CLOCK BAKELIKE GREEN	12	01/12/10 08:45	3.75	12583	France
536370	21724	PANDA AND BUNNIES STICKER SHEET	12	01/12/10 08:45	0.85	12583	France

- Identify unusual customers e.g.
  - Big spenders (large volumes of high price items)
  - Wholesalers (large volumes of diverse items)
  - etc.
- Segment products according to characteristics e.g.
  - Most popular products by country and time of day
  - Least popular products

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Multidimensional Outlier Detection

Create Feature Vector

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Description	Average of UnitPrice	Count of CustomerID	Sum of Quantity
4 PURPLE FLOCK DINNER CANDLES	£2.46	39	144
50'S CHRISTMAS GIFT BAG LARGE	£1.43	110	1913
DOLLY GIRL BEAKER	£1.50	140	2448
I LOVE LONDON MINI BACKPACK	£4.61	70	389

elastic

Multidimensional Outlier Detection

Create Model from Feature Vector

Description	Average of UnitPrice	Count of CustomerI D	Sum of Quantity
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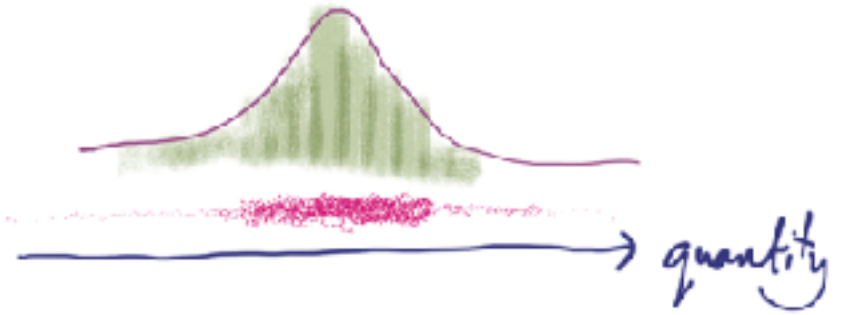

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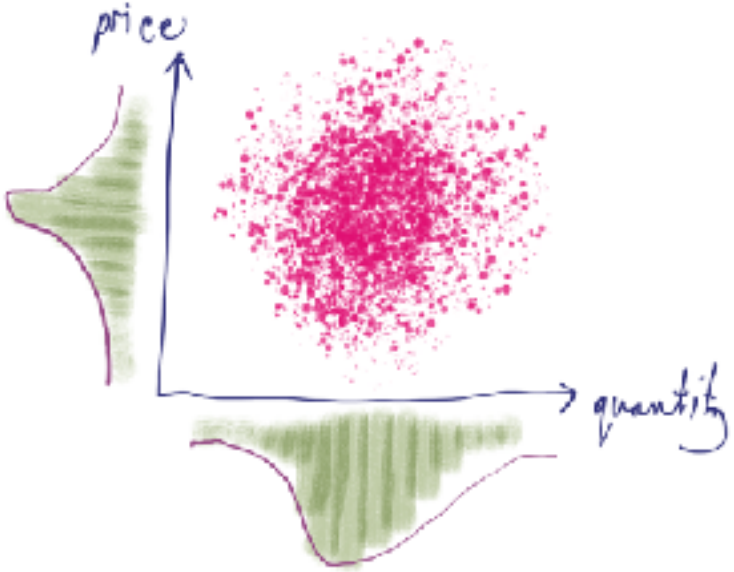

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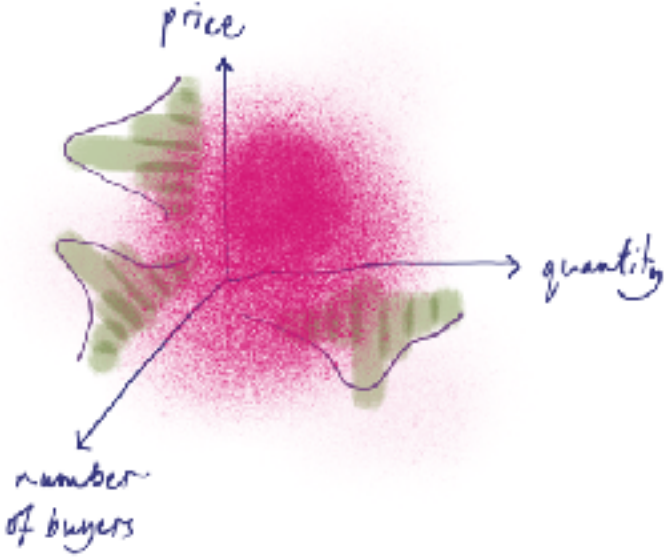

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THANK YOU!

SEE YOU AT AMA!