

What is Machine Learning?



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What machine learning does



Finds patterns in data

Uses those patterns to predict the future

Examples:

- Detecting credit card fraud
- Determining whether a customer is likely to switch to a competitor
- Deciding when to do preventive maintenance on a factory robot
- Lots more





What does it
mean to learn?

How did you learn to read?

Learning requires:

- Identifying patterns
- Recognizing those patterns when you see them again

This is what machine learning does

Finding Patterns: A Simple Example

<i>Name</i>	<i>Amount</i>	<i>Fraudulent</i>
Smith	\$2,600.45	No
Potter	\$2,294.58	Yes
Peters	\$1,003.30	Yes
Adams	\$8,488.32	No

*What's the
pattern for
fraudulent
transactions?*



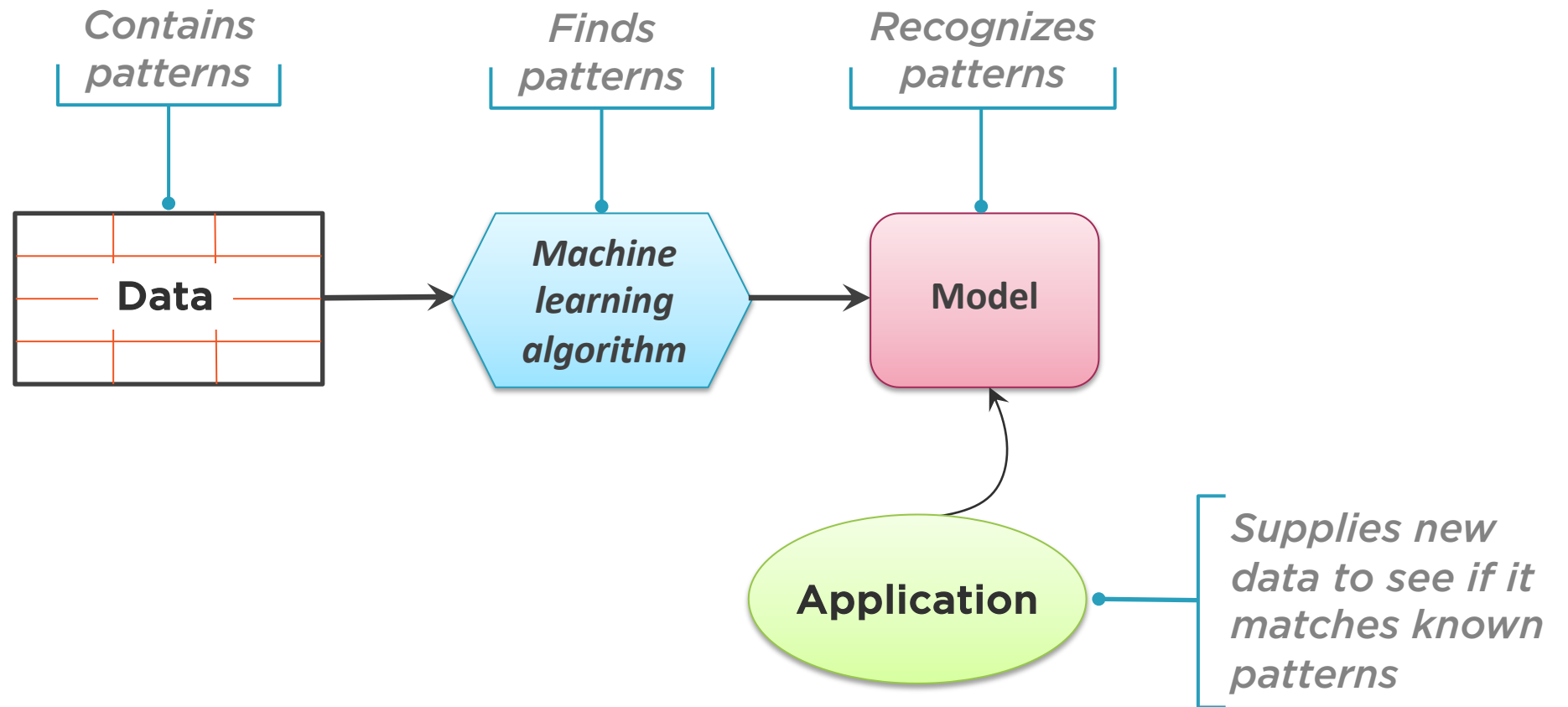
Finding Patterns: Another Example

<i>Name</i>	<i>Amount</i>	<i>Where Issued</i>	<i>Where Used</i>	<i>Age</i>	<i>Fraudulent</i>
Smith	\$2,600.45	USA	USA	22	No
Potter	\$2,294.58	USA	RUS	29	Yes
Peters	\$1,003.30	USA	RUS	25	Yes
Adams	\$8,488.32	FRA	USA	64	No
Pali	\$200.12	AUS	JAP	58	No
Jones	\$3,250.11	USA	RUS	43	No
Hanford	\$8,156.20	USA	RUS	27	Yes
Marx	\$7,475.11	UK	GER	32	No
Norse	\$540.00	USA	RUS	27	No
Edson	\$7,475.11	USA	RUS	20	Yes

*What's the
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Machine Learning in a Nutshell





Why is machine learning so hot right now?

Doing machine learning well requires:

- Lots of data
- Lots of compute power
- Effective machine learning algorithms

All of those things are now more available than ever

Who's Interested in Machine Learning?



Business Leaders
Want solutions to
business problems



Software Developers
Want to create better
applications



Data Scientists
Want powerful, easy-
to-use tools





What is a data scientist?

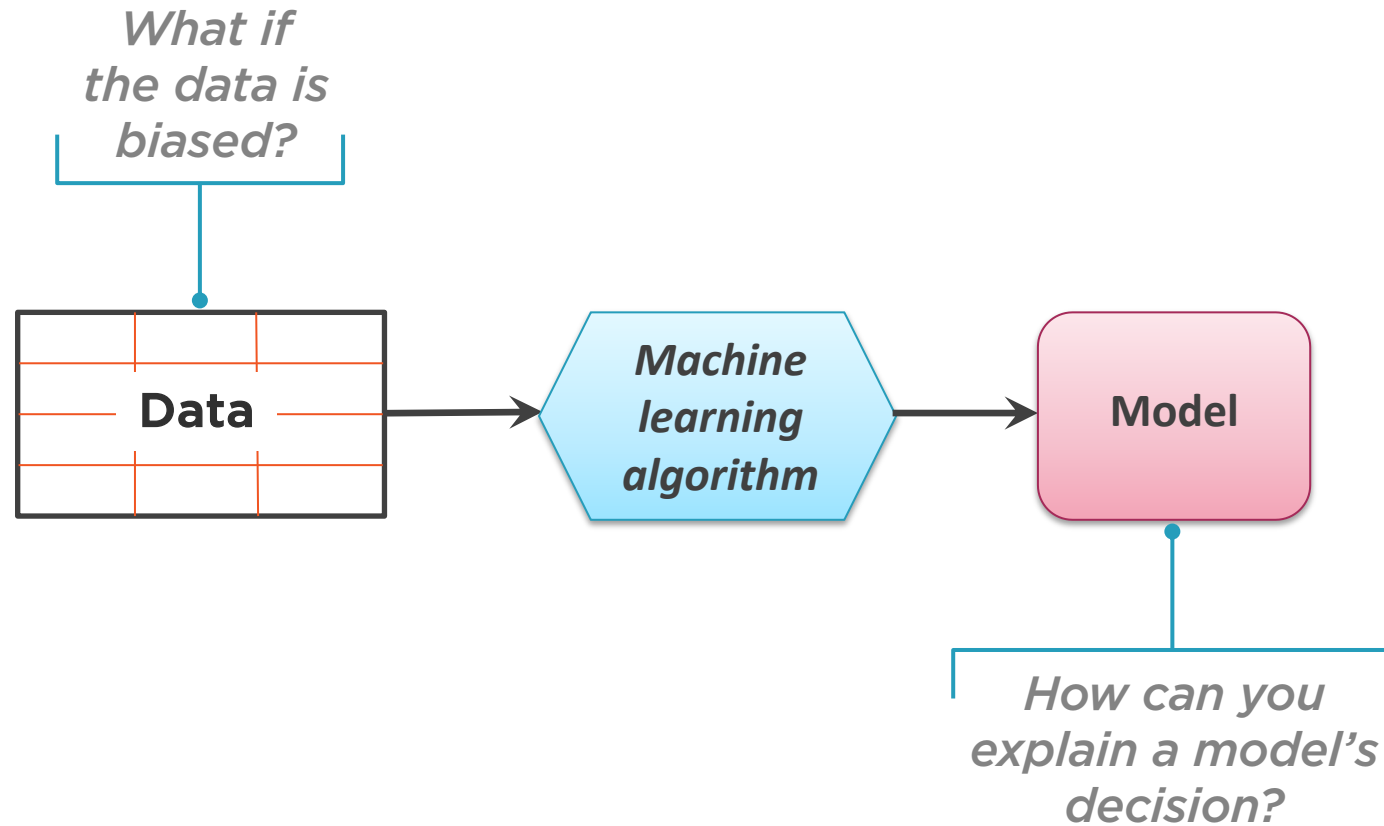
Someone who knows about:

- Statistics
- Machine learning software (and how to coding)
- Some problem domain (ideally)

Key facts about data scientists:

- Good ones are scarce
- Good ones are expensive

The Ethics of Machine Learning





The main points

Machine learning lets us find patterns in existing data, then create and use a model that recognizes those patterns in new data

Machine learning has gone mainstream

- Although it raises ethical concerns

Machine learning can probably help your organization