

# MACHINE LEARNING *IN YOUR EVERYDAY LIFE*



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## Google's AI-Powered Predictions

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Using anonymized location data from smartphones, Google Maps (Maps) can analyze the speed of movement of traffic at any given time. And, with its acquisition of crowdsourced traffic app Waze in 2013, Maps can more easily incorporate user-reported traffic incidents like construction and accidents. Access to vast amounts of data being fed to its proprietary algorithms means Maps can reduce commutes by suggesting the fastest routes to and from work.

## Ridesharing Apps Like Uber and Lyft

How do they determine the price of your ride? How do they minimize the wait time once you hail a car? How do these services optimally match you with other passengers to minimize detours? The answer to all these questions is ML.



## Commercial Flights Use an AI Autopilot

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AI autopilots in commercial airlines is a surprisingly early use of AI technology that dates as far back as 1914, depending on how loosely you define autopilot. The New York Times reports that the average flight of a Boeing plane involves only seven minutes of human-steered flight, which is typically reserved only for takeoff and landing.

## Spam Filters

Your email inbox seems like an unlikely place for AI, but the technology is largely powering one of its most important features: the spam filter. Simple rules-based filters (i.e. “filter out messages with the words ‘online pharmacy’ and ‘Nigerian prince’ that come from unknown addresses”) aren’t effective against spam, because spammers can quickly update their messages to work around them.



## Smart Email Categorization

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Gmail uses a similar approach to categorize your emails into primary, social, and promotion inboxes, as well as labeling emails as important. In a research paper titled, “The Learning Behind Gmail Priority Inbox”, Google outlines its machine learning approach and notes “a huge variation between user preferences for volume of important mail...Thus, we need some manual intervention from users to tune their threshold.

## Plagiarism Checkers

Many high school and college students are familiar with services like Turnitin, a popular tool used by instructors to analyze students' writing for plagiarism.

While Turnitin doesn't reveal precisely how it detects plagiarism, research demonstrates how ML can be used to develop a plagiarism detector.



## Robo-readers

Essay grading is very labor intensive, which has encouraged researchers and companies to build essay-grading AIs. While their adoption varies among classes and educational institutions, it's likely that you (or a student you know) has interacted with these "robo-readers" in some way. The Graduate Record Exam (GRE), the primary test used for graduate school, grades essays using one human reader and one robo-reader called e-Rater.

## Mobile Check Deposits

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Most large banks offer the ability to deposit checks through a smartphone app, eliminating a need for customers to physically deliver a check to the bank. According to a 2014 SEC filing, the vast majority of major banks rely on technology developed by Mitek, which uses AI and ML to decipher and convert handwriting on checks into text via OCR.



## Fraud Prevention

How can a financial institution determine if a transaction is fraudulent? In most cases, the daily transaction volume is far too high for humans to manually review each transaction. Instead, AI is used to create systems that learn what types of transactions are fraudulent. FICO, the company that creates the well-known credit ratings used to determine creditworthiness, uses neural networks to predict fraudulent transactions.

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## Credit Decisions

Whenever you apply for a loan or credit card, the financial institution must quickly determine whether to accept your application and if so, what specific terms (interest rate, credit line amount, etc.) to offer. FICO uses ML both in developing your FICO score, which most banks use to make credit decisions, and in determining the specific risk assessment for individual customers.



## Facebook

When you upload photos to Facebook, the service automatically highlights faces and suggests friends to tag. How can it instantly identify which of your friends is in the photo? Facebook uses AI to recognize faces.

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## Pinterest

Pinterest uses computer vision, an application of AI where computers are taught to “see”, in order to automatically identify objects in images (or “pins”) and then recommend visually similar pins.

## Instagram

Instagram, which Facebook acquired in 2012, uses machine learning to identify the contextual meaning of emoji, which have been steadily replacing slang (for instance, a laughing emoji could replace “lol”). By algorithmically identifying the sentiments behind emojis, Instagram can create and auto-suggest emojis and emoji hashtags.



## Snapchat

Snapchat introduced facial filters, called Lenses, in 2015. These filters track facial movements, allowing users to add animated effects or digital masks that adjust when their faces moved.

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## Search

Search on amazon or flipkart or anyother quickly return a list of the most relevant products related to your search. Amazon doesn't reveal exactly how its doing this, but in a description of its product search technology, Amazon notes that its algorithms "automatically learn to combine multiple relevance features.

## Recommendations

You see recommendations for products you're interested in as "customers who viewed this item also viewed" and "customers who bought this item also bought", as well as via personalized recommendations on the home page, bottom of item pages, and through email.



## **Fraud Protection**

Machine learning is used for fraud prevention in online credit card transactions. Fraud is the primary reason for online payment processing being more costly for merchants than in-person transactions.

## **Voice-to-Text**

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A standard feature on smartphones today is voice-to-text. By pressing a button or saying a particular phrase (“Ok Google”, for example), you can start speaking and your phone converts the audio into text.

## **Smart Personal Assistants**

Now that voice-to-text technology is accurate enough to rely on for basic conversation, it has become the control interface for a new generation of smart personal assistants.