

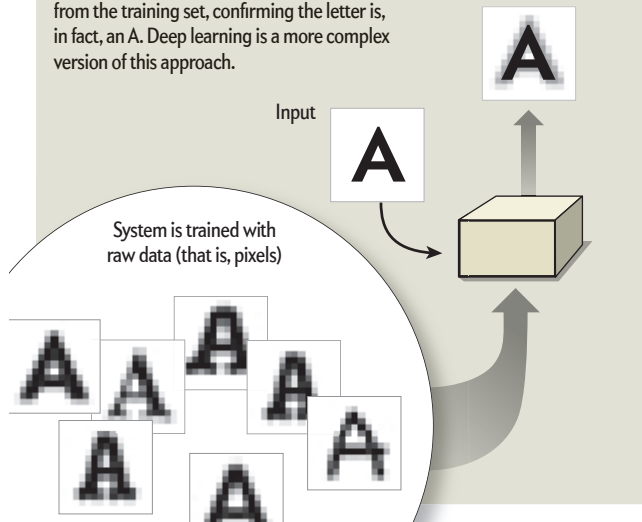
# AI復活への2つの道筋

平均的な5歳児が簡単に解ける問題は、最も強力なコンピュータでさえもつまづくことがある。近年AIはコンピュータに子供と同じように世界を学ぶように教えることで、活気を取り戻している。機械は生の感覚情報から「A」という文字を認識するボトムアップ型アプローチと、既存の知識から推測するトップダウン型アプローチのいずれかである。

## ボトムアップ (ディープラーニング)

Examples of the letter A teach a computer to distinguish patterns of light and dark pixels for various versions of the letter. Then, when the machine receives a new input, it assesses whether the pixels match the configuration from the training set, confirming the letter is, in fact, an A. Deep learning is a more complex version of this approach.

Output: Pixel by pixel,  
this character  
resembles the training  
raw data set; therefore,  
it is an A



## Top Down (Bayesian Methods)

A single example of the letter A suffices to recognize similar examples when using Bayesian methods. The machine builds a model of the letter from its own internal library of "parts," assembling a figure made up of an acute angle joined by a crossbar, an A that can then be used to identify slightly different versions of the letter or to modify it in various ways.

System is primed  
with one example of a new  
concept, enough to support  
a range of output tasks

