

# The AI Playbook

## Mastering the Rare Art of Machine Learning Deployment

By Eric Siegel

### Notes for CHAPTER 5

These notes include references, plus resources for further learning. For all the chapters' notes as well as information about the book in general, access the book's website at [www.bizML.com](http://www.bizML.com).

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Machine Learning, Tom Mitchell, McGraw Hill, 1997

Free PDF download: <http://www.cs.cmu.edu/~tom/mlbook.html>

Uplift modeling -- an introduction and links to much more:

<https://predictiveanalyticsworld.com/uplift>

Peter Norvig quote:

<https://ecpmblog.wordpress.com/2010/03/21/we-dont-have-better-algorithms-than-anyone-else-we-just-have-more-data/>

Caitlin Hudon quote:

<https://twitter.com/beeonaposity/status/1353735905962577920?lang=ca>

"A Few More Examples May Be Worth Billions of [Model] Parameters"

Title of a joint research paper from Tel-Aviv University, University College London, and

Facebook AI Research:

<https://arxiv.org/abs/2110.04374>

Google researchers quote from:

Nithya Sambasivan et al, CHI '21: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems

[https://eva.fing.edu.uy/pluginfile.php/360201/mod\\_resource/content/1/3411764.3445518.pdf](https://eva.fing.edu.uy/pluginfile.php/360201/mod_resource/content/1/3411764.3445518.pdf)

What Did My AI Learn? How Data Scientists Make Sense of Model Behavior

<https://dl.acm.org/doi/10.1145/3542921>

A powerful, helpful visualization of how decision trees work (optional)

<http://www.r2d3.us/visual-intro-to-machine-learning-part-1/>

On the less common but growing practice of applying deep learning for standard predictive analytics business applications:

Key Considerations in Applying Deep Learning to Predict Consumer Behavior

<https://www.predictiveanalyticsworld.com/machinelearningtimes/key-considerations-in-applying-ai-to-predict-consumer-behaviour/10492/>

Example applications of deep learning

<https://www.predictiveanalyticsworld.com/machinelearningtimes/twelve-hot-deep-learning-applications-featured-at-deep-learning-world/9454/>

What deep learning can and can't do

<https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/what-ai-can-and-cant-do-yet-for-your-business>

Example applications of deep learning: Twelve Hot Deep Learning Applications Featured at Deep Learning World

<https://www.predictiveanalyticsworld.com/machinelearningtimes/twelve-hot-deep-learning-applications-featured-at-deep-learning-world/9454/>

Applying deep learning for classical business applications of ML -- to read on this less common but growing practice, see this article:

"Key Considerations in Applying Deep Learning to Predict Consumer Behavior"

<https://www.predictiveanalyticsworld.com/machinelearningtimes/key-considerations-in-applying-ai-to-predict-consumer-behaviour/10492/>

The Unreasonable Ineffectiveness of Deep Learning on Tabular Data

<https://towardsdatascience.com/the-unreasonable-ineffectiveness-of-deep-learning-on-tabular-data-fd784ea29c33>

Deep Neural Networks and Tabular Data: A Survey

<https://arxiv.org/abs/2110.01889>

Why do tree-based models still outperform deep learning on typical tabular data?

[https://openreview.net/forum?id=Fp7\\_phQszn](https://openreview.net/forum?id=Fp7_phQszn)

<https://hal.archives-ouvertes.fr/hal-03723551>

Tabular Data: Deep Learning Is Not All You Need

<https://arxiv.org/abs/2106.03253>

"A tree-based approach performed better than any neural network on most of them"

<https://info.deeplearning.ai/artists-rebel-against-ai-one-weird-trick-beats-go-model-neural-nets-vs.-decision-trees-more-bang-per-chip>

Deep Learning's Diminishing Returns: The cost of improvement is becoming unsustainable  
<https://spectrum.ieee.org/deep-learning-computational-cost>

Fraud Screening for 2/3rds of All Card Transactions: A Consortium and Its Data  
Scott Zoldi, Predictive Analytics World for Financial, New York, October 23-27, 2016

Celent insight on deep learning's potential impact on fraud detection:  
Operationalizing Fraud Prevention on IBM z16  
<https://www.ibm.com/downloads/cas/DOXY3Q94>  
<https://www.celent.com/insights/667453521>

1997 example of neural network for self-driving and the face recognition homework assignment from this foundational textbook:  
Machine Learning, Tom Mitchell, McGraw Hill, 1997  
Free PDF download: <http://www.cs.cmu.edu/~tom/mlbook.html>

I nice view inside the emergence of fundamental ML concepts:  
Historical Thoughts on Modern Prediction  
<https://youtu.be/47tKry9Dsy4>

Twelve Hot Deep Learning Applications Featured at Deep Learning World  
<https://www.predictiveanalyticsworld.com/machinelearningtimes/twelve-hot-deep-learning-applications-featured-at-deep-learning-world/9454/>

A Short Chronology Of Deep Learning For Tabular Data  
<https://sebastianraschka.com/blog/2022/deep-learning-for-tabular-data.html>

On Google Image search using deep learning:  
Image Processing With Deep Learning- A Quick Start Guide  
<https://www.infrd.ai/blog/image-processing-with-deep-learning-a-quick-start-guide>

"Given the fact that the process to "find the best model" is just testing all models and their hyperparameters, what benefits do I have of having deep understanding of ML algorithms?"  
[https://old.reddit.com/r/MachineLearning/comments/14jam9n/d\\_what\\_are\\_the\\_major\\_advantages\\_of\\_having\\_deep/](https://old.reddit.com/r/MachineLearning/comments/14jam9n/d_what_are_the_major_advantages_of_having_deep/)