

# Book recommendation:

## The Elements of Statistical Learning Data Mining, Inference, and Prediction

by Trevor Hastie, Robert Tibshirani and Jerome Friedman

I encountered the 1st edition of The Elements of Statistical Learning (ESL) in 2003 - a few years after its publication in 2001. I spent a good deal of the spring in 2004 on reading the book while using it for a course I gave. At the time I dared to say in front of all my more experienced colleagues that in my course based on ESL there was a clear purpose of the statistical models.

My statement insinuated that purpose was not always so clear in other courses. It was cocky - perhaps excusable by my youth - but what I had seen in the book was the same clear purpose that had also driven the field of machine learning for decades. Models and algorithms were first and foremost supposed to provide good predictions, and there was a clear decision theoretic framework for assessing performance.

The book has had a tremendous effect on my work, and it has been the basis for several courses I have given and projects I have supervised. Its primary strength is its breadth, and it provides a bridge between the terminology and methodology used in statistics and machine learning. It is the combined overview of the three authors that makes this book unique.

It should be noted that ESL is a methodology book and not a mathematics book, and it can, occasionally, be challenging to understand when a statement is an easy derivation and when it is a consequence of a non-trivial result. Many derivations are also relocated to exercises. However, the mathematical level is solid, and I find the exposition to be very readable. The theory is also amply illustrated by figures and examples.

Though my youthful and naive view on purpose has become more nuanced over the years, it is still a fact that ESL is a landmark book in statistics. The current second edition from 2009 is a considerable extension and update of the 2001 edition. It is already a classic and a bestseller, and it has had a huge impact. There may exist more accessible introductions today or more detailed treatments on some of the specific topics covered, but I don't know any other book that coherently covers the broad range of topics in ESL as well as ESL.

*Niels Richard Hansen, 2016*



