

Data Science, AI ML, Computer Science Book List: Recommended Background Reading

If only two...

(concepts and cookbook)

"[Natural Language Processing in Action](#): Understanding, Analyzing, and Generating Text with Python", by Hobson Lane, Hannes Hapke, et al.

<https://www.amazon.com/Natural-Language-Processing-Action-Understanding/dp/B07X37578L/>

(concepts)

[A Brief History of Artificial Intelligence: What It Is, Where We Are, and Where We Are Going](#)

by Michael Wooldridge, Glen McCready, et al.

<https://www.amazon.com/Brief-History-Artificial-Intelligence-Where/dp/B088MMPZ49/>

or

[Artificial Intelligence: A Guide for Thinking Humans](#) (Topic: History & Future of AI)

by [Melanie Mitchell](#) Pelican (October 15, 2019)

<https://www.amazon.com/Artificial-Intelligence-Guide-Thinking-Humans/dp/0241404827/>

Must Read

"[Natural Language Processing in Action](#): Understanding, Analyzing, and Generating Text with Python", by Hobson Lane, Hannes Hapke, et al.

<https://www.amazon.com/Natural-Language-Processing-Action-Understanding/dp/B07X37578L/>

[Alan Turing : The Enigma](#) (Topic: History & Future of AI)

by Andrew Hodges, Simon & Schuster (October 31, 1983)

<https://www.amazon.com/Alan-Turing-Enigma-Inspired-Imitation/dp/069116472X/>

[The Man from the Future](#): The Visionary Life of John von Neumann (Topic: History & Future of AI)

by Ananyo Bhattacharya

<https://www.amazon.com/Man-Future-Visionary-Life-Neumann/dp/1324003995/>

Designing Data-Intensive Applications: 1st Edition (2017)

by [Martin Kleppmann](#)

<https://www.amazon.com/Designing-Data-Intensive-Applications-Reliable-Maintainable/dp/1449373321>

History of Computation, Computer Science & AI

[Alan Turing : The Enigma](#) (Topic: History & Future of AI)

by Andrew Hodges, Simon & Schuster (October 31, 1983)

<https://www.amazon.com/Alan-Turing-Enigma-Inspired-Imitation/dp/069116472X/>

[Possible Minds: Twenty-Five Ways of Looking at AI](#) (Topic: History & Future of AI)

by John Brockman - editor, et al.

<https://www.amazon.com/Possible-Minds-audiobook/dp/B07MQX54TW/>

[The Man from the Future](#): The Visionary Life of John von Neumann (Topic: History & Future of AI)
by Ananyo Bhattacharya

<https://www.amazon.com/Man-Future-Visionary-Life-Neumann/dp/1324003995/>

[A Mind at Play](#): How Claude Shannon Invented the Information Age

by Jimmy Soni and Rob Goodman | Jul 17, 2018

<https://www.amazon.com/Mind-Play-Shannon-Invented-Information/dp/147676669X/>

[The Logician and the Engineer](#): How George Boole and Claude Shannon Created the Information Age

by Paul J. Nahin | Oct 28, 2012

<https://www.amazon.com/Logician-Engineer-Shannon-Created-Information-ebook/dp/B0091XBUTM/>

(Note: **Not** an expertly written book, but few books exist on this topic.)

[A People's History of Computing in the United States](#) (History of Time-Sharing Networks pre-WWW)

by Joy Lisi Rankin, Bernadette Dunne, et al.

<https://www.amazon.com/Peoples-History-Computing-United-States/dp/B07HHDFVHM/>

(Note: Rambling/ranting introduction is not good, but history content of main text is very good)

[A Brief History of Artificial Intelligence: What It Is, Where We Are, and Where We Are Going](#)

by Michael Wooldridge, Glen McCready, et al.

<https://www.amazon.com/Brief-History-Artificial-Intelligence-Where/dp/B088MMPZ49/>

AI Narratives: A History of Imaginative Thinking about Intelligent Machines

by Stephen Cave - editor, Kanta Dihal - editor, et al.

<https://www.amazon.com/AI-Narratives-Imaginative-Thinking-Intelligent/dp/0198846665/>

[Cult of the Dead Cow](#) (Topic: History of Computers)

by Joseph Menn, Jonathan Davis, et al.

<https://www.amazon.com/Cult-of-Dead-Cow-Joseph-Menn-audiobook/dp/B07RX456JM>

[Fancy Bear Goes Phishing](#): (Topic: History of Computers & cybersecurity)– May 23, 2023

by Scott J. Shapiro

<https://www.amazon.com/Fancy-Bear-Goes-Phishing-Extraordinary/dp/0374601178>

(Excellent)

[Alan Turing's Systems of Logic: The Princeton Thesis](#) (Topic: History of Computer Science)

by Andrew W. Appel | May 27, 2012

<https://www.amazon.com/Alan-Turings-Systems-Logic-Princeton/dp/0691155747>

(A set of books about history and the history of the internet,
which really ought to be read together.)

We Are All Targets: How Renegade Hackers Invented Cyber War and Unleashed an Age
of Global Chaos

by Matt Potter, Matthew Waterson, et al.

<https://www.amazon.com/We-Are-All-Targets-Unleashed/dp/B0B831PN81/>

- +
Postwar
Postwar: A History of Europe Since 1945
by Tony Judt, Ralph Cosham, et al.
<https://www.amazon.com/Postwar-History-Europe-Since-1945/dp/B004IDNQOW/>
- +
Thinking the Twentieth Century
by Tony Judt, Timothy Snyder, et al.
<https://www.amazon.com/Thinking-the-Twentieth-Century/dp/B0074JO2SG/>
- +
There Is Nothing For You Here: Finding Opportunity in the Twenty-First Century
by Fiona Hill
<https://www.amazon.com/There-Nothing-You-Here-Twenty-First/dp/B08XY9782K/>
- +
Black Earth: The Holocaust as History and Warning
by Timothy Snyder, Mark Bramhall, et al.
<https://www.amazon.com/Black-Earth-Timothy-Snyder-audiobook/dp/B014X6Q80M/>
- +
Sandworm: A New Era of Cyberwar and the Hunt for the Kremlin's Most Dangerous Hackers
by Andy Greenberg, Mark Bramhall, et al.
<https://www.amazon.com/Sandworm-Andy-Greenberg-audiobook/dp/B07RGRTZM6/>

The Information (Topic: History of Computers)

by James Gleick

<https://www.amazon.com/Information-History-Theory-Flood/dp/1400096235>

The Innovators (Topic: History of Computers)

by Walter Isaacson, Dennis Boutsikaris, et al.

<https://www.amazon.com/The-Innovators-Walter-Isaacson-audiobook/dp/B00M9KICAY/>

Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins

by Garry Kasparov, May 2, 2017

<https://www.amazon.com/Deep-Thinking-Machine-Intelligence-Creativity/dp/161039786X/>

Broad Band: The Untold Story of the Women Who Made the Internet

by Claire L. Evans, Jul 7, 2020

<https://www.amazon.com/Broad-Band-Untold-Story-Internet/dp/0593329449/>

Technology and the Academics: an Essay on Universities and the Scientific Revolution

by Eric Ashby, 1958 (Classic, must read history of STEM book.)

<https://www.amazon.com/Technology-Academics-Universities-Scientific-Revolution/dp/1014404819>

<https://www.amazon.com/technology-Academics-Eric-Ashby/dp/B003F8DMPO/>

General AI-ML Reading

(Perhaps my favorite, most re-read, most-recommended overall AI book. The focus is NLP, but it is a great (the best?) general Data Science book, as it is so well written.)

Natural Language Processing in Action: Understanding, Analyzing, and Generating Text with Python

by **Hobson Lane**, Hannes Hapke, et al.

<https://www.amazon.com/Natural-Language-Processing-Action-Understanding/dp/B07X37578L/>

(Note: This is a must-read as **Francois Chollet** created **Keras**.)

Deep Learning with Python, Second Edition

by **Francois Chollet** | Dec 21, 2021

<https://www.amazon.com/Learning-Python-Second-Fran%C3%A7ois-Chollet/dp/1617296864/>

[Rebooting AI](#) (Topic: Comparing AI model performance)

by Gary Marcus, Ernest Davis, et al.

<https://www.amazon.com/Rebooting-AI-Building-Artificial-Intelligence/dp/052556604X>

[Artificial Intelligence: A Guide for Thinking Humans](#) (Topic: History & Future of AI)

by [Melanie Mitchell](#) Pelican (October 15, 2019)

<https://www.amazon.com/Artificial-Intelligence-Guide-Thinking-Humans/dp/0241404827/>

[Complexity: A Guided Tour](#) (Topic: Nonlinearity, Dynamical Systems, "Complexity")

by [Melanie Mitchell](#) Oxford University Press (2009)

<https://www.amazon.com/Audible-Complexity-A-Guided-Tour/dp/B09SND3L5D/>

[Deep Learning \(Adaptive Computation and Machine Learning series\)](#) (Deep Learning)

by [Ian Goodfellow](#), [Yoshua Bengio](#), et al.

<https://www.amazon.com/Deep-Learning-Adaptive-Computation-Machine/dp/0262035618/>

[How to Change Your Mind](#) (Topic: mind & consciousness research)

by Michael Pollan and Penguin Audio

<https://www.amazon.com/How-to-Change-Your-Mind-audiobook/dp/B07B1V3RF5>

[The Brain That Changes Itself](#) (Topic: mind & consciousness research)

by Norman Doidge M.D., Jim Bond, et al.

<https://www.amazon.com/Brain-That-Changes-Itself-Frontiers/dp/B001ANZW00>

[The Brain's Way of Healing: Frontiers of Neuroplasticity](#) (Topic: mind & consciousness research)

by Norman Doidge, George Newbern, et al.

<https://www.amazon.com/The-Brains-Way-of-Healing-audiobook/dp/B00RC527CU>

[How to Create a Mind](#) (Topic: Mind and consciousness research)

by Ray Kurzweil, Christopher Lane, et al.

<https://www.amazon.com/How-Create-Mind-Thought-Revealed/dp/1491518839>

[When Einstein Walked with Gödel](#) (Assorted Essays Involving Data & Statistics)

by Jim Holt, David Stifel, et al.

<https://www.amazon.com/When-Einstein-Walked-with-Gdel-audiobook/dp/B07CZMGMFZ>

[An Introduction to Genetic Algorithms \(Complex Adaptive Systems\)](#)

(Wonderful book written in the late 90's so it covers familiar territory but outside of the buzzwords and echochamber of ~2020 discussion, very illuminating and refreshing.)

by [Melanie Mitchell](#)
<https://www.amazon.com/dp/0262133164>

Analogy-Making as Perception: A Computer Model (Neural Network Modeling and Connectionism)

by [Melanie Mitchell](#)
<https://www.amazon.com/Analogy-Making-Perception-Computer-Modeling-Connectionism/dp/026251544X/>

Gödel, Escher, Bach: An Eternal Golden Braid Paperback – February 5, 1999

by Douglas R Hofstadter
<https://www.amazon.com/G%C3%B6del-Escher-Bach-Eternal-Golden/dp/0465026567/>

[The Tipping Point](#): (Assorted Essays Involving Data & Statistics)

by Malcolm Gladwell
<https://www.amazon.com/The-Tipping-Point-audiobook/dp/B000OYD8T2>

[Outliers: The Story of Success](#) (Assorted Essays Involving Data & Statistics)

by Malcolm Gladwell
<https://www.amazon.com/Outliers-Malcolm-Gladwell-audiobook/dp/B001LNK9C4/>

[Antifragile: Things That Gain from Disorder](#)

by Nassim Nicholas Taleb, Joe Ochman, et al.
<https://www.amazon.com/Antifragile-Nassim-Nicholas-Taleb-audiobook/dp/B00A2ZIZYQ>

[Predictably Irrational](#) (Topic: Mind and consciousness research)

by [Dan Ariely](#)
<https://www.amazon.com/Predictably-Irrational-Revised-Expanded-Decisions/dp/0061353248/>

[The Undoing Project](#) (Topic: Mind and consciousness research)

by Michael Lewis, Dennis Boutsikaris, et al
<https://www.amazon.com/The-Undoing-Project-Michael-Lewis-audiobook/dp/B01KBM82M4/>

[Thinking, Fast and Slow](#) (Topic: Mind and consciousness research)

by Daniel Kahneman, Patrick Egan, et al.
<https://www.amazon.com/Thinking-Fast-and-Slow-audiobook/dp/B005Z9GAJG/>

[Social Engineering](#) (Where computer science and behavioral neuroscience meet)

by Christopher Hadnagy | Jul 31, 2018
<https://www.amazon.com/Social-Engineering-Science-Human-Hacking/dp/111943338X>

[Real Magic](#) (Topic: Mind and consciousness research)

by Dean Radin, Mark Bramhall, et al.
<https://www.amazon.com/Real-Magic-Dean-Radin-audiobook/dp/B07BGCQDR2/>

And...since you can't study DS with statistics, and you can't study statistics without studying economics, and you can't study economics without the history of economics:

[Economic Thought Before Adam Smith : History of Economic Thought \(Vol. 1\)](#)

by [Murray N. Rothbard](#)

<https://www.amazon.com/Economic-Thought-Before-Adam-Smith/dp/1852789611>

&

[Classical Economics : History of Economic Thought Vol.2\)](#)

by [Murray N. Rothbard](#)

<https://www.amazon.com/Classical-Economics-Austrian-Perspective-Economic-ebook/dp/B003H4R8N8>

And since understanding the roots of common terminology and concepts can be so important:

[Aristotle's Political Theory: An Introduction for Students of Political Theory](#)

by [R. G. Mulgan](#)

<https://www.amazon.com/Aristotles-Political-Theory-Introduction-Students/dp/0198274165>

[A New Kind of Science](#) (Survey of Cellular Automata including CA-based Modeling)

by [Stephen Wolfram](#)

<https://www.amazon.com/New-Kind-Science-Stephen-Wolfram-ebook/dp/B01N1I83V8/>

[Naked Statistics: Stripping the Dread from the Data](#) (Survey of statistics concepts/applications)

Part of: [Naked Series \(3 Books\)](#) | by Charles Wheelan

<https://www.amazon.com/Naked-Statistics-Stripping-Dread-Data/dp/039334777X>

[The Measure of Reality: Quantification and Western Society, 1250-1600](#) (History of Science)

by [Alfred W. Crosby](#)

<https://www.amazon.com/Measure-Reality-Quantification-Western-1250-1600/dp/0521639905>

[Descartes' Bones: A Skeletal History of the Conflict Between Faith and Reason](#) (History of Science)

by [Russell Shorto](#)

<https://www.amazon.com/Descartes-Bones-Skeletal-History-Conflict/dp/0307275663>

[Enlightenment Now: The Case for Reason, Science, Humanism, and Progress](#) (Data & Society)

by [Steven Pinker](#)

<https://www.amazon.com/Enlightenment-Now-Science-Humanism-Progress/dp/0143111388>

[Guns, Germs, and Steel: The Fates of Human Societies](#) (Data Society History)

by [Jared Diamond](#)

<https://www.amazon.com/Guns-Germs-and-Steel-audiobook/dp/B004JLTPTI>

[Collapse: How Societies Choose to Fail or Succeed](#) (Data Society History)

by [Jared Diamond](#)

<https://www.amazon.com/Collapse-Jared-Diamond-audiobook/dp/B00P2QCN2U>

[The World Until Yesterday](#) (Data Society History)

by [Jared Diamond](#)

<https://www.amazon.com/World-Until-Yesterday-Traditional-Societies-ebook/dp/B008EKOO46>

[The Rise and Fall of American Growth](#) (Data Society History)

by [Robert J. Gordon](#)

<https://www.amazon.com/Rise-Fall-American-Growth-Princeton/dp/0691147728/>

Escape from Model Land: How Mathematical Models Can Lead Us Astray and What We Can Do About It

by Erica Thompson | Dec 6, 2022

<https://www.amazon.com/Escape-Model-Land-Mathematical-Models/dp/1541600983/>

(Note: The chapter on the history of weather-prediction is a must, even if you don't like the rest of the book.)

Thinking in Systems:

by Donella H. Meadows and Diana Wright | Dec 3, 2008

<https://www.amazon.com/Thinking-Systems-Donella-H-Meadows/dp/1603580557/>

Cosmosapiens: Human Evolution from the Origin of the Universe

by John Hands | Aug 16, 2022b

<https://www.amazon.com/Cosmosapiens-Human-Evolution-Origin-Universe-ebook/dp/B07MW8T7LB/>

The History of the Future: Oculus, Facebook, and the Revolution That Swept Virtual Reality

by Blake J. Harris, Stephen Graybill, et al.

<https://www.amazon.com/The-History-of-Future-audiobook/dp/B07J1Q7GVW/>

Virtual Society: The Metaverse and the New Frontiers of Human Experience

by Herman Narula and Random House Audio

<https://www.amazon.com/Virtual-Society-Metaverse-Frontiers-Experience/dp/B09SGXT539/>

Statistics & Math

The Theory That Would Not Die: How Bayes' Rule Cracked the Enigma Code, Hunted Down Russian Submarines, and Emerged Triumphant from Two Centuries of Controversy

by Sharon Bertsch McGrayne

<https://www.amazon.com/The-Theory-That-Would-Not-Die-audiobook/dp/B007PXLU3G/>

The Signal and the Noise: Why So Many Predictions Fail - but Some Don't

by Nate Silver, Mike Chamberlain, et al.

<https://www.amazon.com/The-Signal-and-Noise-Nate-Silver-audiobook/dp/B009HL6444/>

Significant Figures: The Lives and Work of Great Mathematicians

by Ian Stewart, Roger Clark, et al.

<https://www.amazon.com/Significant-Figures-Ian-Stewart-audiobook/dp/B0757S1XTJ/>

Databases: Data, Memory & Resource Management

Designing Data-Intensive Applications: 1st Edition (2017) [Must Read]

by [Martin Kleppmann](#)

<https://www.amazon.com/Designing-Data-Intensive-Applications-Reliable-Maintainable/dp/1449373321>

Database Internals: A Deep Dive into How Distributed Data Systems Work 1st Edition
by Alex Petrov

<https://www.amazon.com/Database-Internals-Deep-Distributed-Systems/dp/1492040347>

Rust Atomics and Locks: Low-Level Concurrency in Practice
by Mara Bos | Feb 7, 2023

<https://www.amazon.com/Rust-Atoms-locks-Low-Level-Concurrency/dp/1098119444/>

Implementing Hardware-Friendly Databases (with DuckDB co-creator, Hannes Mühleisen)
Developer Voices

<https://www.youtube.com/watch?v=pZV9FvdKMLc>

Programing Language Books & Resources

C Programming Language, 2nd Edition
by Brian W. Kernighan (Author), Dennis M. Ritchie (Author)

<https://www.amazon.com/Programming-Language-2nd-Brian-Kernighan/dp/0131103628/>

Rust in Action
by Tim McNamara | Aug 10, 2021

<https://www.amazon.com/Rust-Action-TS-McNamara/dp/1617294551/>

Hacker's Delight
by Henry Warren | Sep 25, 2012

<https://www.amazon.com/Hackers-Delight-2nd-Henry-Warren/dp/0321842685/>

C Courses on Udemy

<https://www.udemy.com/course/c-programming-for-beginners/>

<https://www.udemy.com/course/advanced-c-programming-course/>

Command-Line Rust: A Project-Based Primer for Writing Rust CLIs
by Ken Youens-Clark | Feb 22, 2022

<https://www.amazon.com/Command-Line-Rust-Project-Based-Primer-Writing/dp/1098109430/>

TinyML: Machine Learning with TensorFlow Lite on Arduino and Ultra-Low-Power
Microcontrollers

by Pete Warden (Author), Daniel Situnayake (Author)

<https://www.amazon.com/TinyML-Learning-TensorFlow-Ultra-Low-Power-Microcontrollers/dp/1492052043>

Smaller C: Lean Code for Small Machines

by [Marc Loy](#)

<https://www.amazon.com/Smaller-Lean-Code-Small-Machines/dp/1098100336>

Chris Lattner on production data science

Developer Voices <https://www.youtube.com/@DeveloperVoices>

"Mojo Lang - Tomorrow's High Performance Python? (with Chris Lattner)"
<https://www.youtube.com/watch?v=JRcXUuQYR90&t=2810s>

CppCon 2018: Matt Godbolt "The Bits Between the Bits: How We Get to main()"
<https://www.youtube.com/watch?v=dOfucXtyEsU>