

Department of Computer Science Reading List 2017

This is a small selection of books that you may find it interesting to read or browse through. You are *not required* to read any of them, but we hope you may wish to look at some of them. If you do, you will get an idea of what computer science is, and what it will be like to study it. You will be advised which books you *need* to buy for the courses when you arrive.

General

- **Computer Science: An Overview** by Glenn Brookshear. This is a good big textbook that covers a lot – a good book to dip into.
- **Algorithmics, the Spirit of Computing** by David Harel, Addison-Wesley. This is an excellent introduction to algorithms, most suitable for those who already have some programming experience.
- **Secrets and Lies: Digital Security in a Networked World** by Bruce Schneier. The book of choice for information security, by a leader in the field.
- **The Signal and the Noise: Why so many predictions fail – but some don't** by Nate Silver. This is an excellent introduction to modelling and predicting complex system behaviour. The chapter on how Gary Kasparov was beaten by an IBM built computer in chess is worth reading on its own.
- **The Golden Ticket: P, NP, and the Search for the Impossible** by Lance Fortnow. One of Amazon.com's 2013 Best Science Books. One of Choice's Outstanding Academic Titles for 2013. Honorable Mention for the 2013 PROSE Award in Popular Science & Mathematics, Association of American Publishers
- **Quantum Computing Since Democritus** by Scott Aaronson (Cambridge University Press 2013) "... a tour through some of the deepest ideas of maths, computer science and physics...covers an amazing array of topics. Beginning in antiquity with Democritus, it progresses through logic and set theory, computability and complexity theory, quantum computing, cryptography... Aaronson's informal style makes this fascinating book accessible to readers with scientific backgrounds..."

Internet

- **Weaving the Web: the Past, Present, and Future of the World Wide Web by its Inventor** by Tim Berners-Lee. The title is self-explanatory!
- **Where Wizards Stay Up Late: The Origins of the Internet** by Katie Hafner and Matthew Lyon, Simon and Schuster.

Programming

- Mostly we recommend that you do it, rather than read about it. There are abundant web resources for projects in Python. Alternatively, if you have an Android phone, you can download **Android Studio** and program your phone with some of the excellent examples available from Google.
- If you have some prior experience, even with a scripting language, then you might like **Head First Java** second edition, by Kathy Sierra and Bert Bates, which is amusing and very solid.
- **The Psychology of Computer Programming** by Gerald Weinberg. Silver Anniversary Edition (1998). Not a technical book. It's an easy read, but it does assume a bit of exposure to programming. Lots of insights about what happens in programming projects, and different approaches to programming.

Futurology

This is an exciting historical moment: computer science will bring enormous changes to the world.

- **The Singularity is Near** by Raymond Kurzweil. This is a very controversial but bold prediction of where computer science may eventually go.

Entertainment

- **Logicomix: An Epic Search for Truth** by Apostolos Didactylos and Christos H. Papadimitrou. A graphic novel for all who want to know more about the history and nature of computing.
- **Gödel, Escher, Bach: an eternal golden braid** by Douglas Hofstadter. This book should be compulsory reading for any computer enthusiast who wants to understand the deep structures of computer science and the way those structures are shared with subjects such as music and art.

History

- **The Facebook Effect** by David Kirkpatrick. One account of the astonishing rise of Facebook from its origins in a college dorm room....
- **The Cathedral & the Bazaar** by Eric Raymond O'Reilly. A short history of the open source movement.
- **The Cuckoo's Egg** by Clifford Stoll. An old but classic account of tracking a hacker, a very readable and lively story with some internet history in there too. *Surprisingly, this is now out of print: if you can find it in a library, it's a gripping story.*
- **The Thrilling Adventures of Lovelace and Babbage: the (mostly) true story of the first computer** by Sydney Padua. Lively – and the explanation of the Analytical Engine is the best around. Sydney Padua is associated with the department.

Cryptography and Information Security

- **The Code Book** by Simon Singh. A lively account of codes and code-breaking by a Royal Holloway alumnus.
- **Traces of Guilt** by Neil Barrett, ISBN-10: 0552150886. A good read with some technical detail.

Unix

- **Unix in a Nutshell** by Arnold Robbins, O'Reilly, 2005. This is a very handy little textbook when encountering any Unix based system for the first time.