



# Computer Systems and Professional Practice

Professor Matthew Leeke  
School of Computer Science  
University of Birmingham

Anatomy of a Professional

# The British Computer Society (BCS)

The British Computer Society (BCS) is the professional body for those working in computing and information technology in the UK

1. Accreditation
2. Education and Training
3. Ethical Guidance and Standards
4. Community and Networking
5. Policy, Lobbying, and Advocacy
6. Promoting Digital Literacy



# What Is A Professional?

# What is a Professional?

leadership  
experience  
self discipline  
accountability  
integrity  
reliability  
punctuality  
improvement  
experience  
time  
honesty  
credibility  
motivation  
organization  
respect  
collaboration  
adaptability  
organization  
responsibility  
customer problem  
problem solving  
work  
knowledge  
continuous

communication teamwork management ethical respect

# What is a Computing Professional?

The word cloud illustrates the characteristics of a Computing Professional. The words are arranged in a grid-like structure with varying sizes and colors:

- Software**: collaboration, problem
- Teamwork**: time, management, reliability, discipline, integrity, respect, credibility, expertise, solving, self, honesty
- Ethical**: initiative, accountability, leadership, dependability, ethic, motivation
- Programming**: punctuality, adaptability, improvement, customer, responsibility, continuous, commitment, focus, knowledge
- Communication**: experience, quality, work, responsibility, continuous, commitment, focus, knowledge

# How Do We Develop Professional Skills?

We could ask some more fundamental questions

Are some professional skills inherent ?

How can we develop the professional skills we possess?

What even are the professional skills that we might like to develop?

How does assumed/expected knowledge relate to professional skills?

# Professional Practical Topics

1. Anatomy of a Professional
2. Academic Writing and Plagiarism
3. Communication and Presentations
4. Professional Technologies
5. CVs, Covering Letters, and Interviews
6. Commercial and Legal Issues
7. Ethical, Moral and Social Perspectives

# Academic Writing and Plagiarism

Academic integrity is of the utmost importance, not just when you're studying but also as you enter the professional world

Academic writing is more than just writing that you submit to your university

Plagiarism is among the most severe offences that an academic or scientist can commit, hence it is vital that you are able to understand and avoid plagiarism of all forms

Parallels with what you will see in professional environments - the skills and knowledge transfer!

# Communication and Presentations

Communication is not always easy

An unavoidable component of teamwork

Not uniformly challenging for different individuals

We'll study written communication, but we will also focus will be on delivering effective presentations



# Professional Technologies

Do you know Git? LaTeX? Docker? The limitations of generative AI? We can keep going...

Knowing specific technologies is not a professional skill, but professionals tend to have a strong understanding and competency in relevant technologies within their field

What are the underlying professional skills?

A commitment to personal development, self-improvement, and life-long learning

# CVs, Covering Letters, and Interviews

**JADON**  
Computer Science

 {Web Domain}     {Email}  
 {Phone Number}     {github.com}

---

**SUMMARY**  
A self-driven and enthusiastic learner looking to specialise in networking and learn more about Cybersecurity and operating systems. A wide range of experience with practical applications of various different technologies across multiple environments. Spent 16 month developing a number of bespoke technical solutions within PwC.

---

**EDUCATION**

2020 - 2024    **University of Birmingham: B.Sc. Computer Science (with Digital Technology Partnership)**  
Grade: 1:1 (expected)  
Year 1 - 80% Average, Year 2 - 77% Average  
  
Year 3 Modules: *Advanced Networking, Security of Real-World Systems, Dependable and Distributed Systems, Mobile and Ubiquitous Computing*  
Year 2 Modules: *Security and Networks, Systems Programming in C/C++, Function Programming, Artificial Intelligence 2, Software Engineering and Professional Practice, Team Project*  
Year 1 Modules: *Data Structures and Algorithms, Object Oriented Programming, Artificial Intelligence 1, Full Stack Application Development, Mathematical and Logical Foundations of Computer Science, Theories of Computation*

It is important that you have a CV and Covering Letter soon

We will understand how to effectively communicate on your CV and applications, plus different types of interview

Good to have even a CV to work from - a weak draft can become an excellent CV

# Commercial and Legal Issues

Data Protection and Freedom of Information

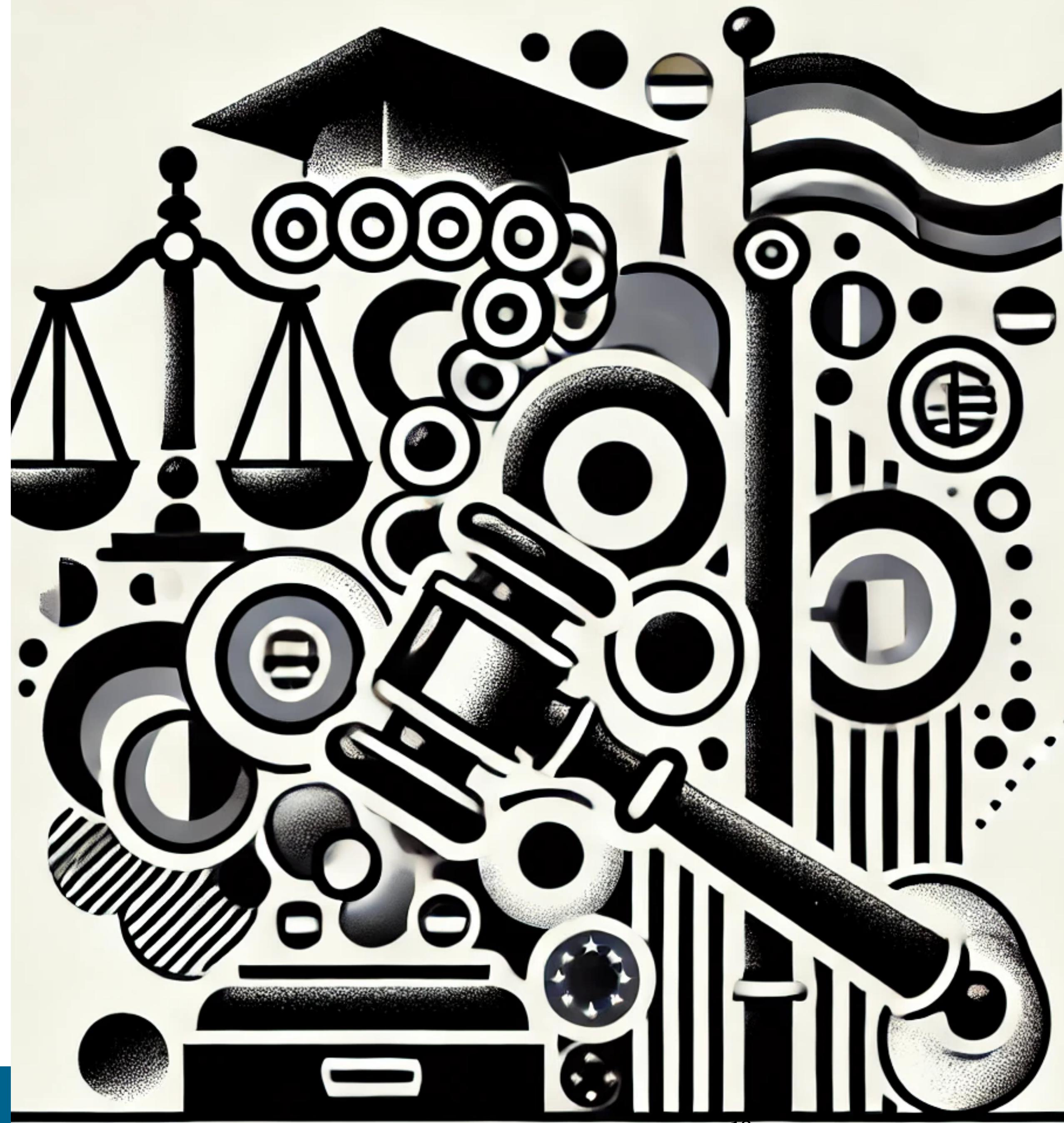
Computer Misuse

Intellectual Property

Organisations, Finance, and Statutory

Contracts, Health and Safety, and HR

Fundamentals of UK Law



# Ethical, Moral and Social Perspectives

We could fill your entire undergraduate programme, but we'll focus on some interesting topics

Ethical Frameworks

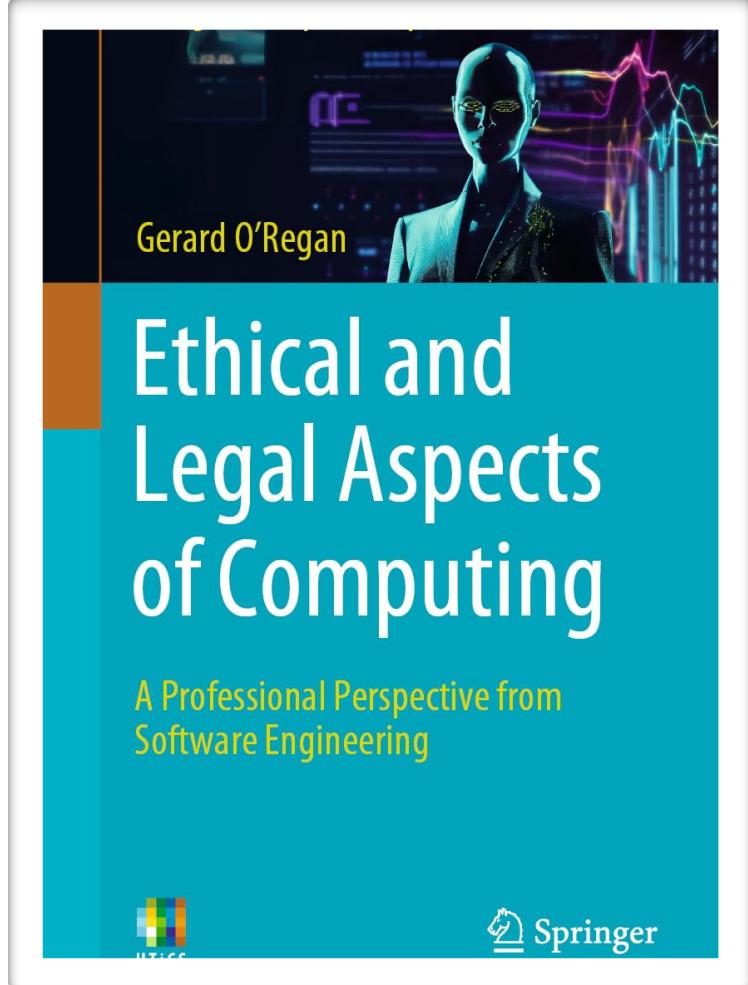
Data Privacy and Security

Bias and Fairness in Algorithms

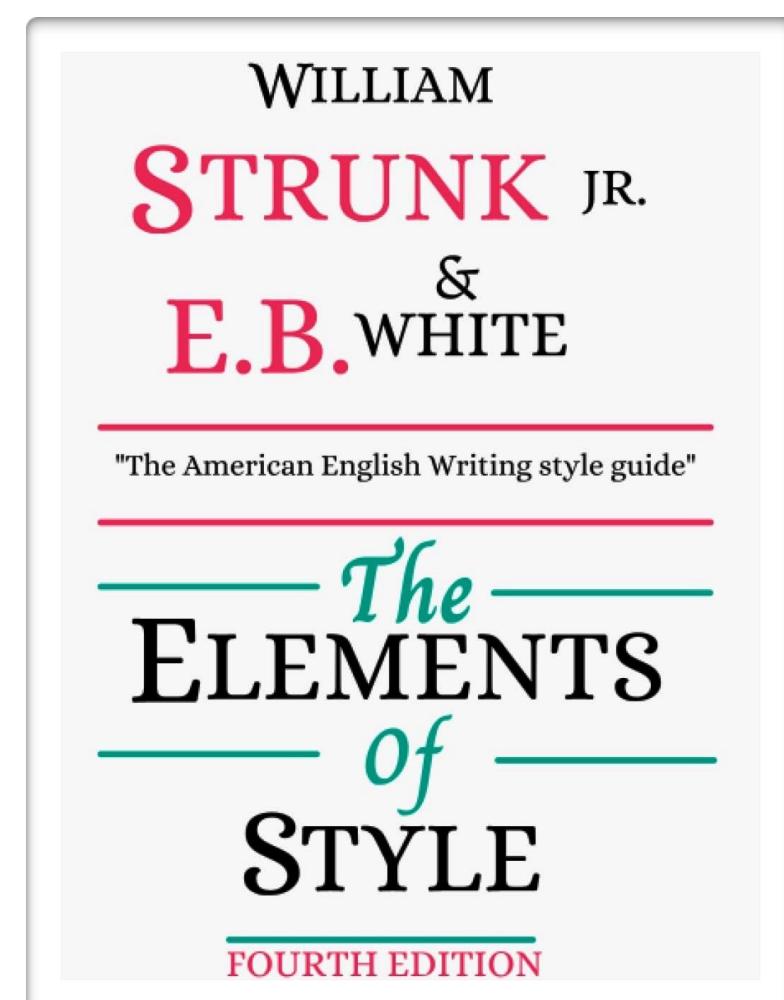
Artificial Intelligence and Automation Ethics

Social Impact of Emerging Technologies

# Recommended Books



G. O'Regan. *Ethical and Legal Aspects of Computing: A Professional Perspective from Software Engineering*, Springer, March 2024



W. Strunk Jr., E. B. White. *The Elements of Style (Fourth Edition)*, Independent, August 2023

You're welcome to buy a book but it's not required and it's unlikely to be as useful as engaging with the discussion in lectures

It would be better to review the public resources relating to the topics and issues raised throughout the module

# Summary

Developing as a computing professional is an unending journey, but you can be prepared for it

We will think about aspects of professional conduct and competencies that represent a baseline for those entering a professional environment, whether industrial or scientific

Some topics can be challenging and must be approached with maturity - the challenge will be worth it for the enduring personal and professional benefit

