

# Introduction to Algorithms, Agents and AI

CITS3001 Algorithms, Agents and Artificial Intelligence



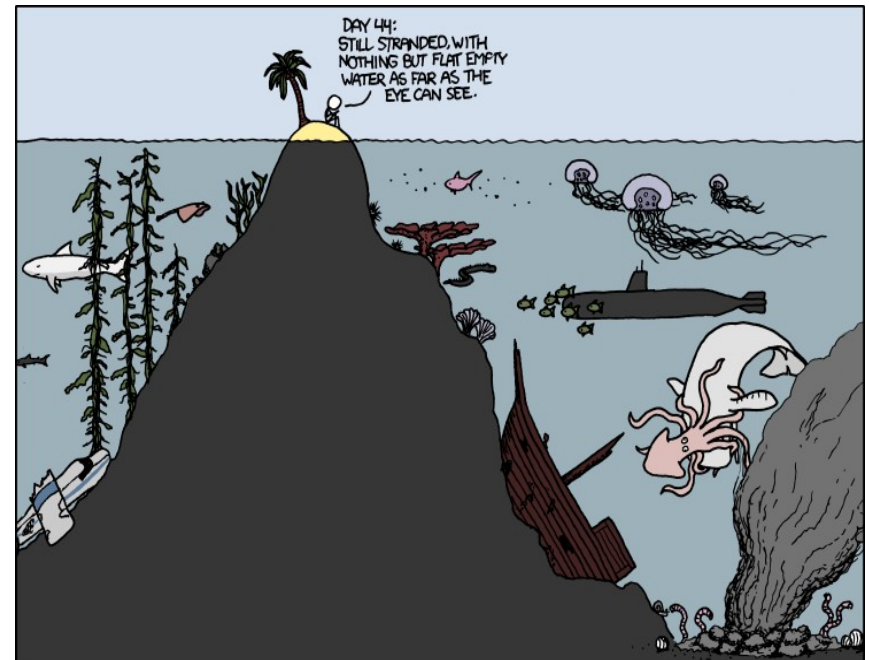
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2021, Semester 2

# Course Outline

- Review of basic concepts in algorithms
- Algorithms for addressing optimisation problems
- Introduction to and history of artificial intelligence
- Structure of “rational agents”
  - Problem solving
  - Search strategies, game playing
- Structure of “learning agents”
  - Decision-making
  - Reinforcement learning
- Planning methodologies
- Knowledge representation and reasoning



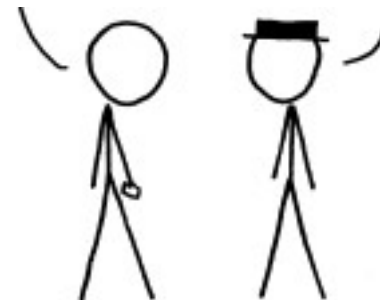
# Contact

- Lectures
  - 10am–12pm Monday, Woolnough Lecture Theatre
- Labs
  - Monday 8-10, Tuesday 10-12, Thursday 8-10 and Friday 12-2 in CSSE:2.05, Tuesday 2-4 online (via Microsoft Teams)
  - Weeks 2–12
  - All software is free and open-source
- Workshops
  - Thursday 2-3pm in Tattersalls Lecture Theatre
  - Compulsory. Will work through questions from labs, exams etc.
- Microsoft Teams
  - A discussion form, chat and direct messaging, and streaming lectures and workshops.
  - Check it regularly, and feel free to post questions, comments, or answers here.
- Tim French
  - [tim.french@uwa.edu.au](mailto:tim.french@uwa.edu.au)
  - Unit coordinator & Lecturer
  - Consultation: Thursday 12-2 in CS rm 2.14



# Resources

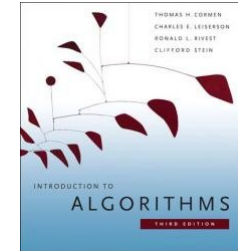
- Everything significant will be distributed via the unit web-site
  - [teaching.csse.uwa.edu.au/units/CITS3001](http://teaching.csse.uwa.edu.au/units/CITS3001) and LMS
- The only exception is that the lecture recordings will be available via the LMS
- Announcements will be made
  - In lectures
  - On *Microsoft Teams*
- When something has been announced in these two places, we will assume that you are aware of it
- Most cartoons are courtesy of [xkcd.com](http://xkcd.com)



# Texts

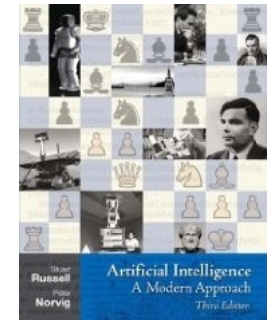
*Introduction to Algorithms*, Cormen, Leiserson, Rivest, and Stein  
[mitpress.mit.edu/books/introduction-algorithms](http://mitpress.mit.edu/books/introduction-algorithms)

Any edition will do



*Artificial Intelligence: a Modern Approach* Russell and Norvig  
<http://aima.cs.berkeley.edu>

Any edition will do



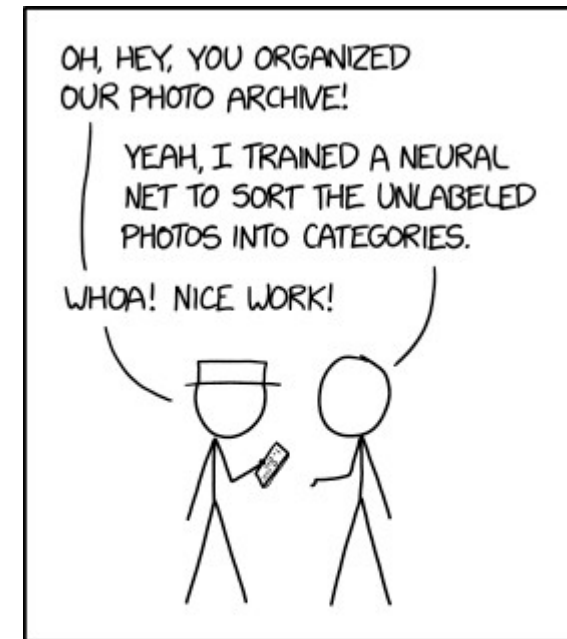
*AI: Foundations of Computational Agents* Poole and Mackworth  
<http://people.cs.ubc.ca/~poole/aibook/html/ArtInt.html>

Free online book



# Assessment

- Mid-semester test
  - During the workshop on 20th September
  - Written test, will involve demonstrating operational understanding of various algorithms
  - Worth 10%
- Laboratories
  - Weeks 3, 5 and 7
  - Programming exercises
  - Worth 10%
- Project
  - The period after the mid-semester break
  - Major programming exercise. Will involve researching, implementing, and evaluating AI algorithms for a given problem
  - Worth 30%
- Exam
  - During the November exam period
  - Written answers to short questions
  - Worth 50%



ENGINEERING TIP:  
WHEN YOU DO A TASK BY HAND,  
YOU CAN TECHNICALLY SAY YOU  
TRAINED A NEURAL NET TO DO IT.