

The Search for the Social Algorithm

A man with a mustache, wearing a black raincoat and hood, stands in the foreground. Behind him is a protest site with various tents covered in blue and green tarps. Signs are visible, including one that says "DEAD END NEEDED!" and another that says "NICKEL AND DIMED". A metal barricade is in the middle ground, and a large black banner with yellow text is partially visible on the right. The background shows trees and a city building.

Stephen Downes
October 12, 2021

Governance and Anarchy

- We have reached a point in history where we don't know how to govern ourselves
- As *individuals* we struggle with what to believe and how to survive in an increasingly unfair world
- As a *society* we struggle with issues of power and information in the face of multiple global crises





Complexity and Chaos

- Rapid change
- Information moving at the speed of light
- Globalization (and global problems)
- Division and polarization
- Breakdown of communities and institutions
- Mismanagement of complex events

The Paucity of Our Response

- We need to view ‘analytics’ much more widely, as (say) “using data about students and their activities ‘to help institutions understand and improve educational processes, and provide better support to learners’” (Sclater)
- We need a deeper understanding of ‘ethics’ as more than just a set of rules and principles. “Colleges should teach ethical reasoning rather than just ethical principles.” (Sternberg)
- All of this is happening in a climate of change we have yet to fully grasp...

Sternberg: <https://www.ideaedu.org/idea-notes-on-learning/developing-ethical-reasoning-and-or-ethical-decision-making/>

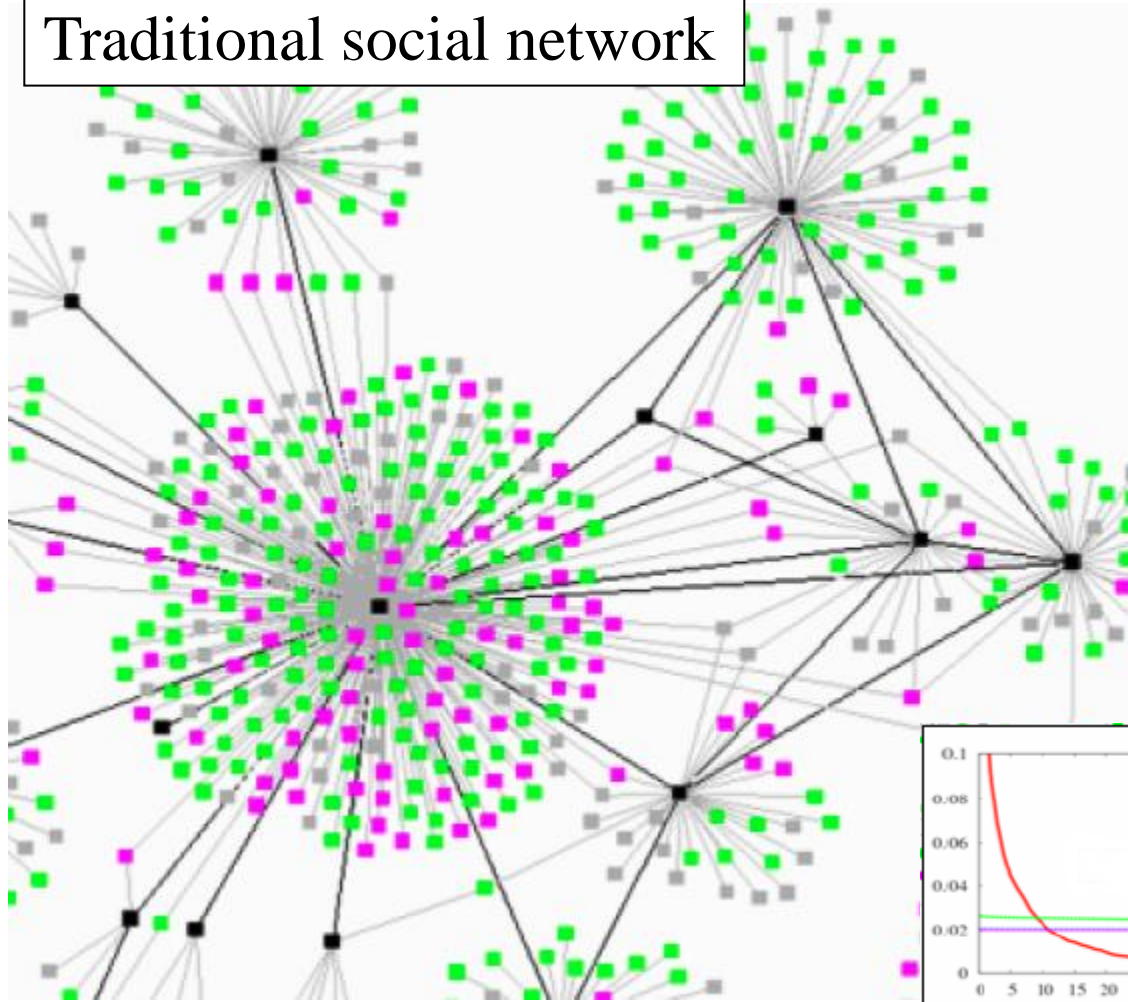
Sclater: https://www.researchgate.net/publication/282150533_Developing_a_Code_of_Practice_for_Learning_Analytics

Society is
transforming
from a tree to a
mesh

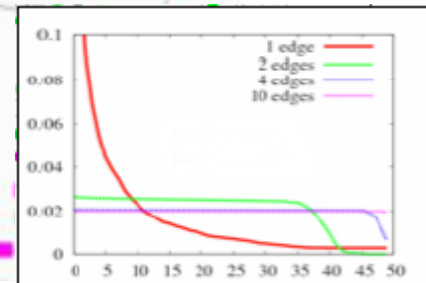


Network Structures - Tree

Traditional social network

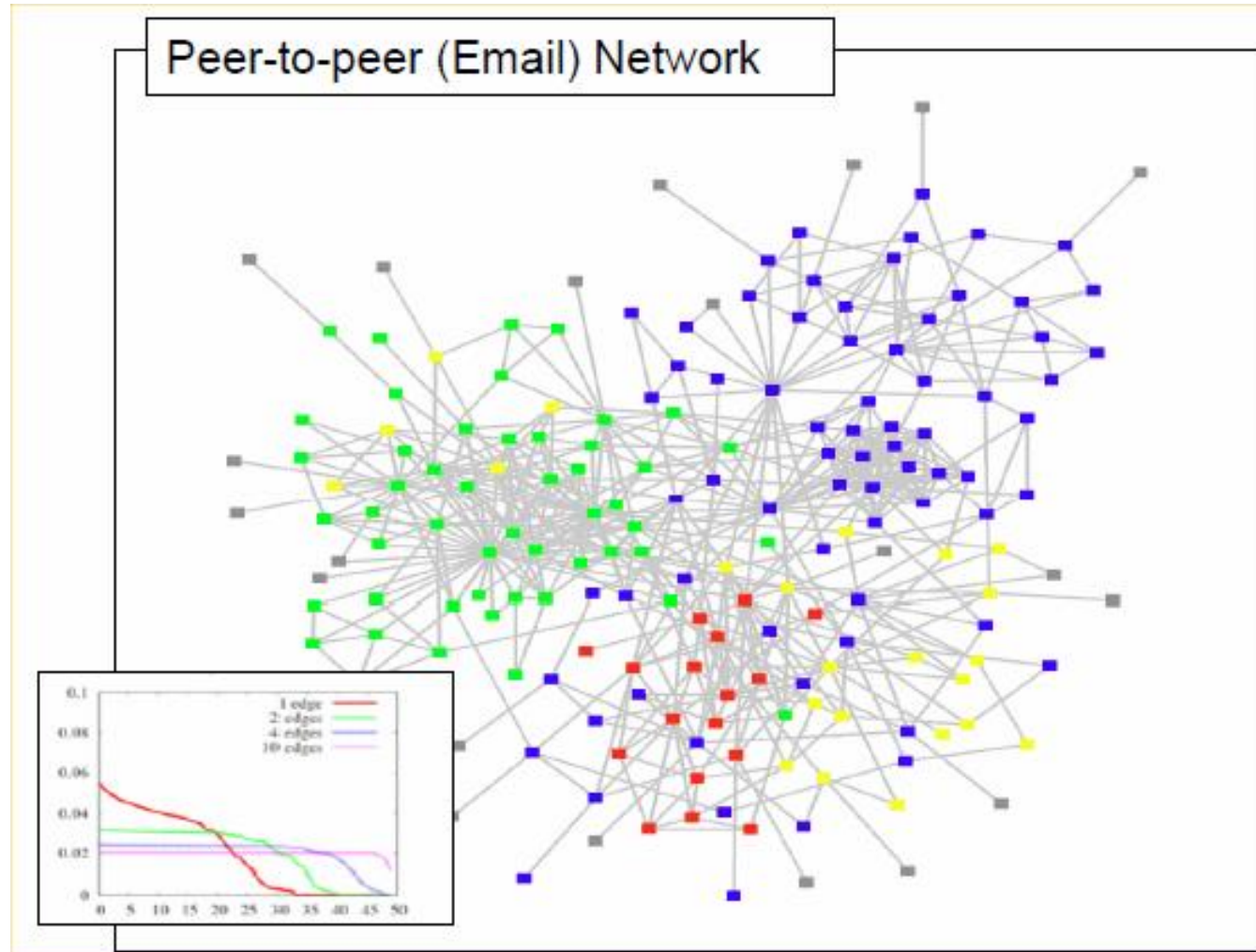


Central
Influence
Power Law
Viral
Hierarchy



<http://middleburydemocrats.wordpress.com/2008/09/28/college-democrats-getting-obama-to-go-viral-no-really/>

Network Structures - Mesh



Distributed
Discussion
Balanced
Reflective
Democracy

<http://www.daniel-lemire.com/fr/abstracts/DIVERSITY2008.html>

<http://www.mailchimp.com/blog/using-email-to-uncover-hidden-social-networks/>

What is it Like to Live in a Mesh?

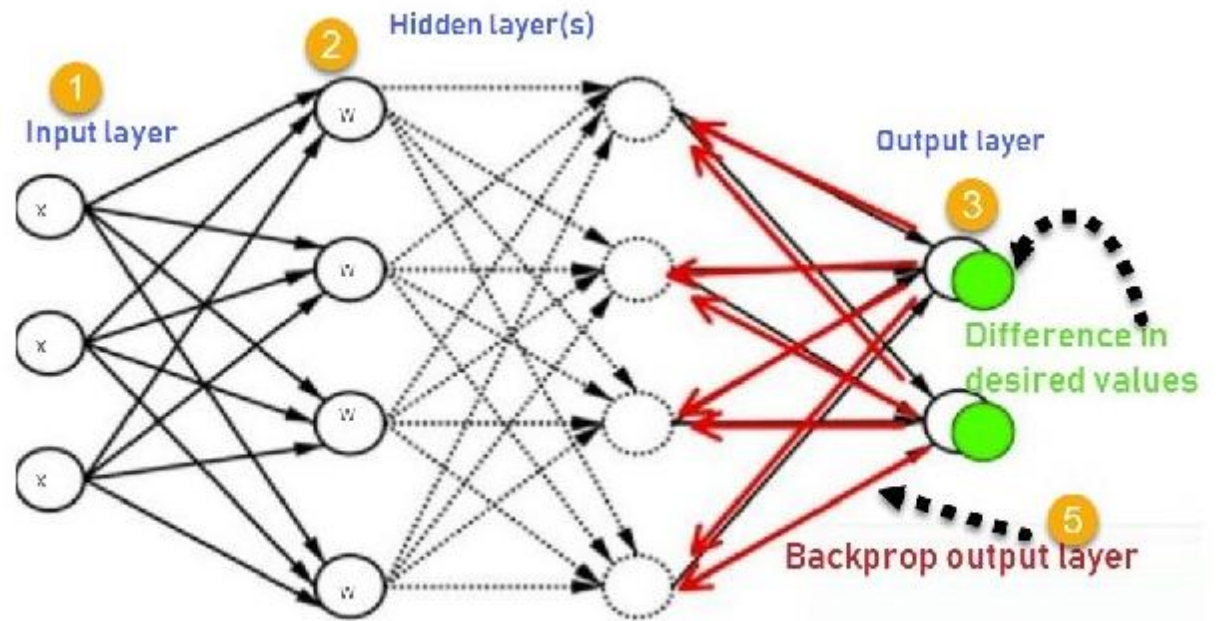
- What matters?
- How do we know?
- What can we do?
- Etc.

We are only
beginning to learn



AI / Neural Networks

- Inputs and outputs
- The study of algorithms that add or strengthen/weaken connections
- Also: activation functions, topographies, etc
- The intent is to produce the set of algorithms that will produce the best result
- E.g. Hinton, Rumelhart & McClelland, etc.

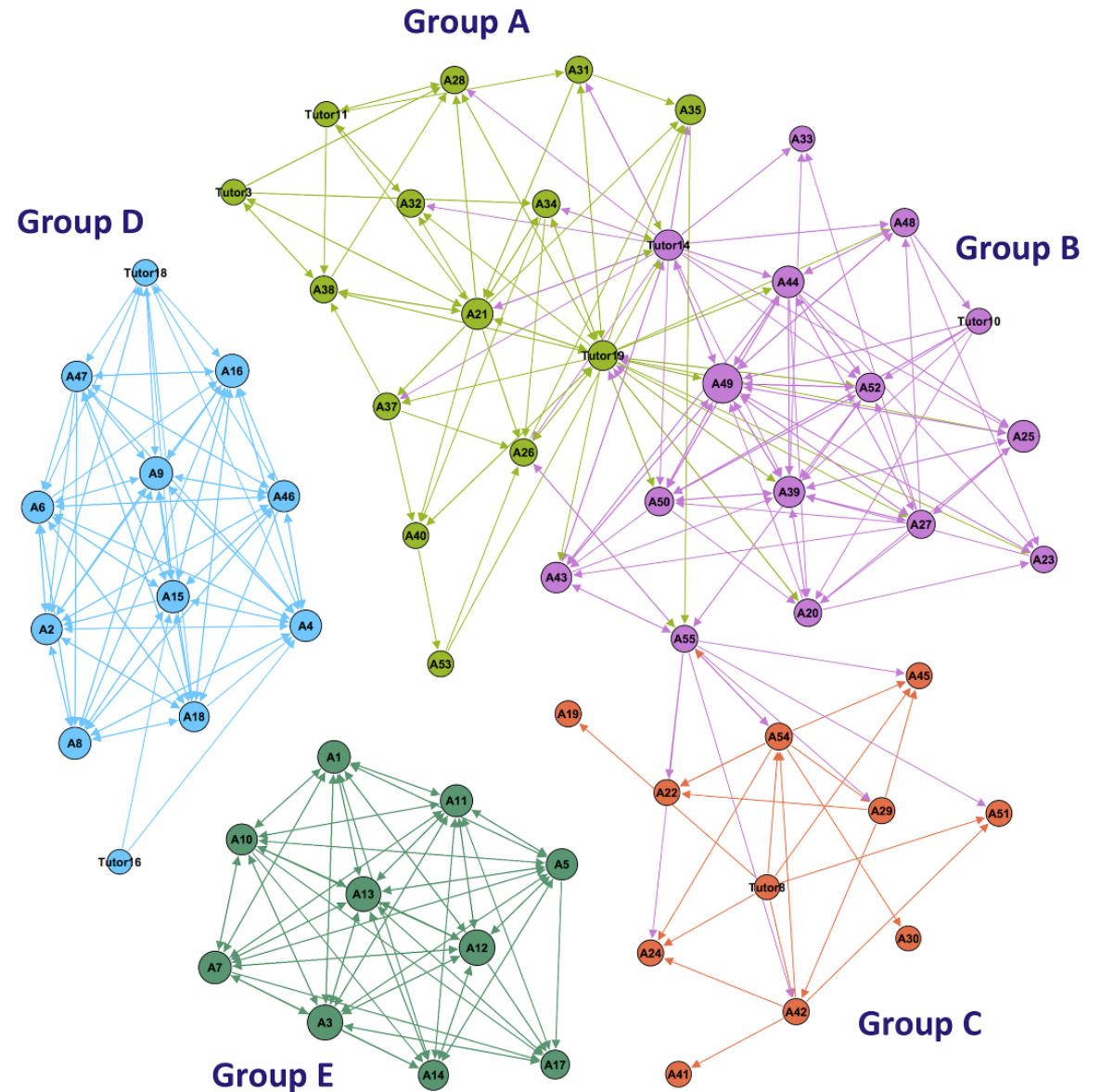


<https://www.guru99.com/backpropagation-neural-network.html>

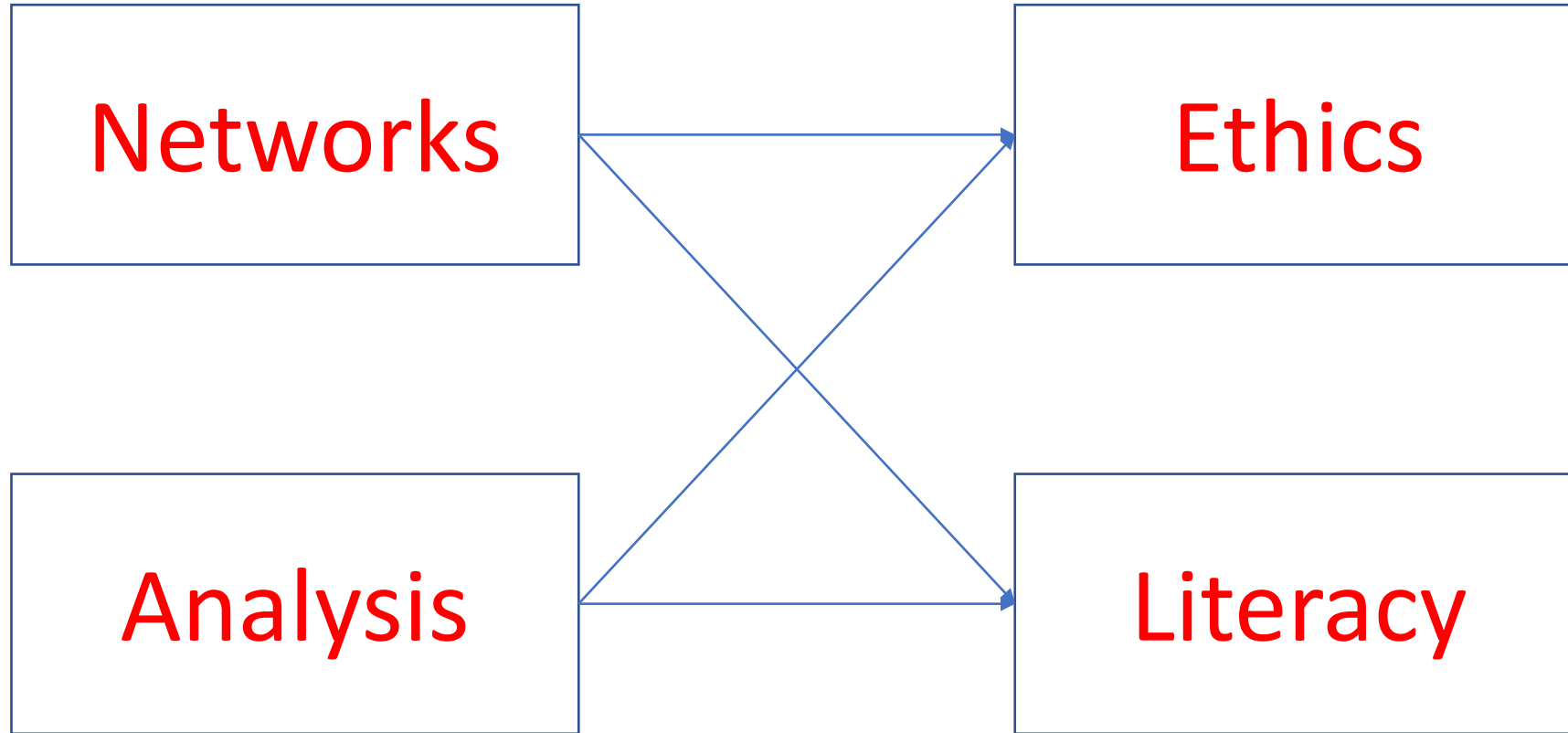
Learn more: <https://machinelearningmastery.com/>

Neural & Social Network Analysis

- The study of networks in the world
- Identification of entities and the connections between them
- Studies network topology and also the growth and development of networks
- Objective is to explain why things are the way they are
- E.g. Watts, Barabasi, Krebs, etc.



Learn more: <https://towardsdatascience.com/how-to-get-started-with-social-network-analysis-6d527685d374>



Ethics, Analytics & the Duty of Care

- MOOC – October to November 2021 <https://ethics.mooc.ca>
- AIP-CoP AI in Learning Subcommittee Report (Government of Canada internal)
- NRC Research Ethics Board <https://nrc.canada.ca/en/corporate/values-ethics/research-involving-human-participants/research-ethics-board>
- Data Equity Working Group (NRC internal but see <https://drive.google.com/drive/folders/1tjLyb6R18GTh4mR5Q56TX2ZVFz2rDgk8>)
- Creative Commons Ethics of Sharing Report <https://docs.google.com/document/d/1GRx7V2utoVV-bd2ALzYv5fSxIIMNmMHAftEHHPbYMJQ/edit>
- Ethical Codes and Learning Analytics <https://www.downes.ca/post/71041>

Data Literacy

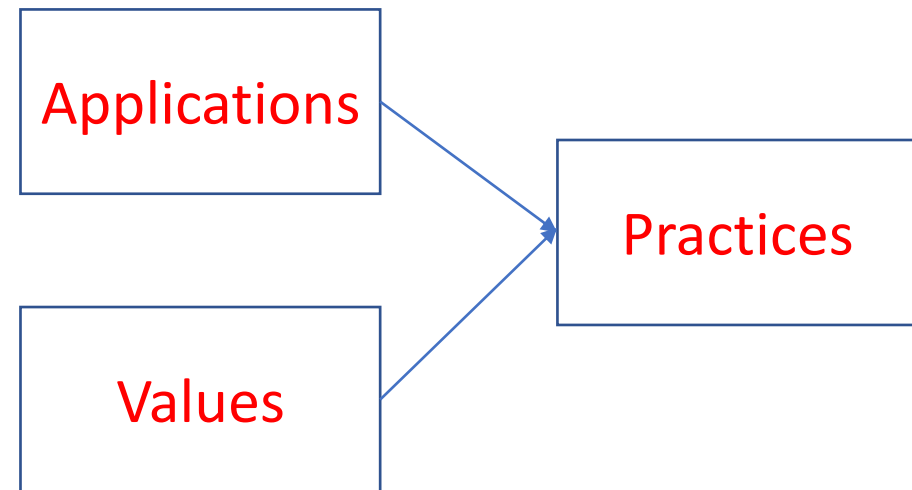
- MOOC February to March, 2022
- DRDC Data Literacy Project (DRDC internal but see https://cradpdf.drdc-rddc.gc.ca/PDFS/unc362/p813314_A1b.pdf)
- FAIRsFAIR book project
https://docs.google.com/document/d/1_xs3mMDKGybSbOxHBslbH8qpTaf4gjuW6z_GSZYMk_c/edit
- What Does It mean to Enrol in a Course?
https://docs.google.com/document/d/1kbhkWzl99-7v0G6AokTHWZr98lrPzLwqYBez_b_mW0wg/edit
- CovidEA Reports <https://www.foggs.org/covidea/>
- Blockchain and Consensus
<https://docs.google.com/document/d/1P3UbO7MaOX8N51QvQB06uMifCWiykleU0JQ2ID8fySM/edit#heading=h.34e9fogs01b4>

Critical Literacies

- Applications (Self-Organization, Consensus, Learning Theory)
 - Syntax – patterns, regularizes, classes, etc (where AI is now)
 - Semantics – sense, reference, value, meaning, goals (where AI is moving)
- Values (Diversity, Openness, Interaction, Autonomy)
 - Use – actions, persuasion, interrogations, scientific method, propaganda
 - Context – alternatives, vocabulary and labels, frames, community, culture
- Practices (Aggregate, Remix, Repurpose, Feed Forward)
 - Cognition – argument, explanation, definition, description
 - Change – connections, flow, sequence, progression, cycles

Ethics

- Involves a comprehensive study of what the ethics actually *are* and how they are established
 - How We Apply AI
 - Applications of AI in Learning
 - The Decisions We Make
 - The Ethical Dimension
 - Ethical Issues Identified
 - Approaches to Ethics
 - The Duty of Care
 - Practices
 - Ethical Codes Across Domains
 - Ethical Practices in Learning Analytics



Literacy

- Applications
 - Data Literacy Models
 - Elements of Data Literacy
- Values
 - Benefits of data Literacy
 - Operational Requirements
- Practices
 - Measuring and Assessing
 - Enhancing Data Literacy

