Two More Dependability Challenges

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Introduction

- Building a silk purse out of a sow's ear is the ultimate challenge

- The Internet is unreasonably fragile - simple mistakes have serious consequences

- How can we evolve it into something more dependable?

- Can we apply an immune system analogy to the Internet?

- Do emergent algorithms offer a possible solution?

Emergent Algorithms

- Characterized by highly decentralised local optimisation strategies that achieve some complex desirable global behaviour
    - Analogy with social behaviour of insect colonies
- High degree of decentralisation should make such algorithms resilient to attack
- Could this approach be used to manage a complex system like the Internet?
- Challenge is how to design such algorithms, reason about their dependability, and make a convincing case for their deployment

Evidence-based Dependability

- In the UK, there is now a trend towards evidence based practice in medicine

- Being able to provide evidence for best practice is a sign of maturity and a means of technology transfer

- The challenge for the dependability community is to define "best practice" for building dependable systems, and provide supporting evidence

- But scientific evidence is not enough - also need an understanding of policy making and how to influence the political agenda