
# Technological Singularity

An insight into the posthuman era

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# Motivation

- Popularity of “A.I.” in science fiction
- Nature of the singularity
- Implications of superhuman intelligence
- Controversies regarding ethics in posthuman era
- Singularity: Evolution or Extinction

# What is Technological Singularity?

- Singularity: Point of no definition
- Human-level intelligence ->
  Self-improvement ->
  Superhuman intelligence ->
  Intelligence explosion
- Superior intelligence in all aspects
- Why “Singularity”?

# Prerequisites

- Interaction devices 
- Hardware 
  - 100 million to 100 billion MIPS estimated
  - Blue Gene – 478 million MIPS
- Software 
  - Biological algorithms on silicon hardware
  - Deep Blue – apparent intelligence in narrow domain

# Is it possible?

- No proof of impossibility!
- Race for intellectual supremacy
- Continuous advances in technology –
  Moore's Law, The Law of Accelerating Returns
- Analogous to evolution
  - Evolution of mankind – 5 million years – threefold
  - Computing power – 50 years – million-fold

# Paths to singularity

Ashwin

# Schools of Thought

- Classical Artificial Intelligence
- Neuroscience and Nanoscience
- Human Computer Interfaces and Networks (Intelligence Amplification)

# Neuroscience and Nanoscience

- Studying biological computational models
  - Interaction between individual components
  - Simulation of neural assemblies
  - “Education” of infant system
- Disassemble human brain
  - Inject nanorobots into vitrified brain
  - Map neurons and synapses
  - Replicate using neural network
  - No need to understand higher-level human cognition

# Neuroscience and Nanoscience

Human-level intelligence

\+ Moore's Law

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Faster human-level intelligence

Smarter intelligence

Superhuman intelligence

# Human Computer Interfaces (Intelligence Amplification)

- Human intelligence as a base to build upon
- Human creativity and intuition hard to replicate
- Improvisations to human intelligence
  - Speed
  - Memory
  - Network

# Limitations

- Lower bound on size of transistor
  - Other technologies than Integrated Circuits
- Unpredictable developments in Neuroscience and Nanoscience
- High cost and low feasibility of recreating complex systems

# Implications of Singularity

Avijit

# Stereotypical consequences

- Dominance of a single entity
- Deadlier weaponry
- Global technological unemployment
- Retrogradation of humankind
- Physical extinction of human race

# Optimistic perspective

- Better, (possibly unimaginable) technologies
- Advancement in medical sciences
- Enhancement of mental faculties
- Improve quality of human life
- Effective policy making
- Last invention need ever be made!

# Philosophical chimps?

- Mere speculations, no assurances
- Intelligence gap
- Lessons from history
  - Human intelligence cannot transcend even a single century's progress

# Ethical Issues & Risks

Rohan

# Ethical Issues

- Nature of a superhumanly intelligent entity
  - Autonomous agents
  - Motives resembling humans
  - Desire of liberation
  - Humanlike psyches

# Importance of Initial Motivation

- Definite, declarative goal
- Selection of top-level goal
- Amity / Philanthropy / Servitude towards a small group
- Can be relied upon to “stay” friendly

# Possible Risks

- Failure to give philanthropic supergoal
- False utopia
- Impossible to fetter superhuman intelligence
- *"We need to be careful about what we wish for from a superhuman intelligence as we might get it"*

# Conclusion

- Singularity, if feasible, is bound to happen sooner or later.
- Singularity: Next step in human evolution?
- All said, is it possible for us to comment on singularity?

*Are we smart enough?*

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# Questions?

Thank you.