

Ethics of Automation

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Ethical Automation: Introduction

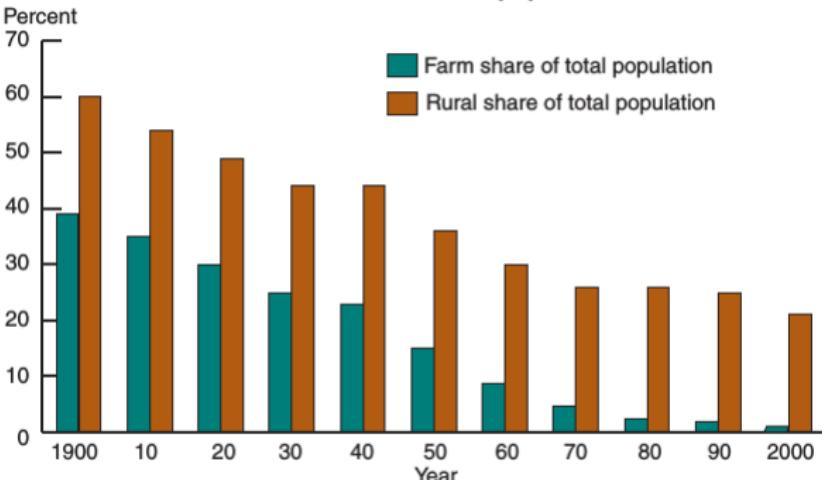
- A note on Labor
- A brief review of the industrial revolution(s)
- The Big Questions:
 - We know automation destroys jobs. How many does it make?
 - What do we do when people lose their jobs?

History tells us otherwise

Ethical Automation: will automation create net job loss?

Figure 1

Both the U.S. farm population and rural population have dwindled as a share of the Nation's overall population

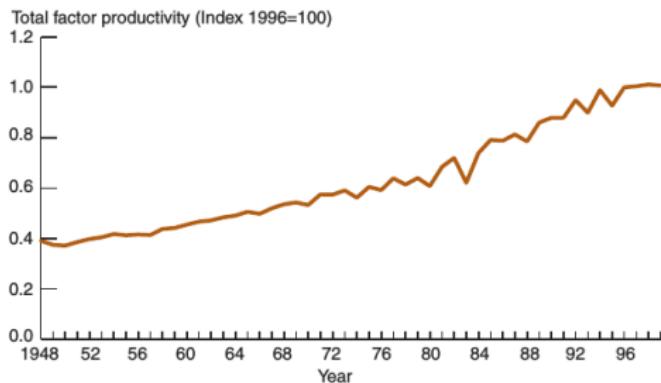


Sources: Share calculated by Economic Research Service, USDA using data from *Census of Agriculture*, *Census of Population*, and *Census of the United States*.

Source:Dimitri, Effland, and Conklin. The 20th century transformation of US agriculture and farm policy.

Ethical Automation: will automation create net job loss?

But surprisingly..



Source:Dimitri, Effland, and Conklin. The 20th century transformation of US agriculture and farm policy.

Ethical Automation: will automation create net job loss?

And even more astonishingly exports went up!



Source:Dimitri, Effland, and Conklin. The 20th century transformation of US agriculture and farm policy.

What type of jobs are automated?

- Human work that is very labor intensive
- repetitive in nature
- Largely, not a creative process.

Automation reduces cost.

- Normally calculated using a Cost-Based Analysis
- Improves efficiency
- ..in turn improving production
- but wait there's more...!

Improves quality of life

- One of the primary pros of automation is the freeing up of time for leisure.
- We have seen a 20 % reduction in work hours from the start of the 20th century to it's end.
- This has left people to pursue more interesting job prospects.

Is there a need for a solution?

TL;DR. No.

Long Answer.

- According to a study carried out by economists at Deloitte UK LLP, using close to 140 years of census data from Wales and Britain.
- Here are some of the results of the study

Ethical Automation: will automation create net job loss?

Chart 4. Accountants

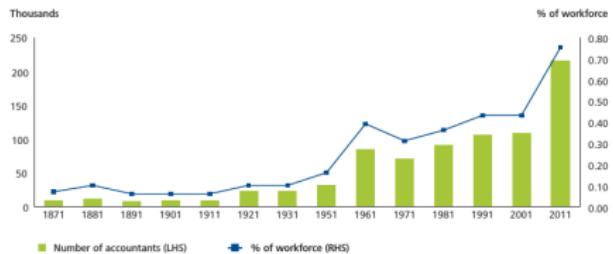


Chart 5. Barstaff

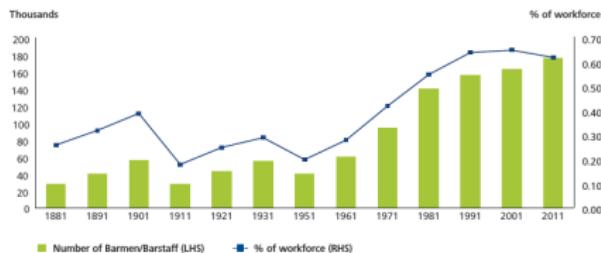
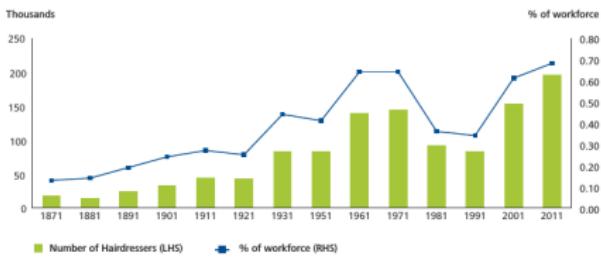


Chart 6. Hairdressers



The situation as it stands now

- We stand at a unique position now, where we are seeing computational power growing rapidly
- We are seeing accessibility to services improving.
- Manage appointments, remember birthdays, suggest restaurants, suggest best possible routes, plan a vacation
- All of the above would require a whole lot of human effort and time to do, today we have apps that do this for us.
- We are slowly seeing a shift from simply menial manual work, but mental work. Some would argue this is a significant paradigm shift.

Amazon's Robot Army and the Human-Machine Symbiosis

- In 2012, Amazon acquired Kiva Systems, that produces the robots that now operate most of amazon's warehouses in the United States
- .."Coincidentally or not, Amazon bought Kiva soon after a press report revealed that workers at one of the retailers giant warehouses often walked more than 10 miles a day."
- Although, this might have led to some jobs being lost. There is still a requirement for human intervention
- Packaging, selecting and various other tasks still require a human to do.
- And the robot is merely a tool.
- ..this is not very different from what happened during the first machine age

In conclusion..

- There is still division amongst economists about whether this is similar to the previous industrial age
- some believe that with more automation of mental activities, we are going to see a sharp decline in 'good-middle class' jobs
- Agreement across the board, that apps taking away knowledge jobs, but it is too early to predict what will happen with certainty.
- One thing is for sure, we are definitely in uncharted territory, the only question is whether it will follow trends we have seen earlier or will it set new trends is yet to be seen.

Ethical Automation: proposed solutions to job loss



- From Worker to Product
 - We've talked about a worker being replaced by a machine
 - How do we talk about those machines?
- What is Responsibility?
- The Big Questions:
 - When an automated machine fails, who is responsible?
 - What kind of failure is acceptable?

Responsiblity

Self-Driving Cars

- The manufacturer is liable for failure, not the user

How Safe is Safe Enough?

424,331 autonomous miles. . . with a catch

- “Safety Driver”
- Relinquished Control
- Emergency Intervention

Is it Moral to Trust the Morality of a Machine?

Ethical Automation: Trust in Automation

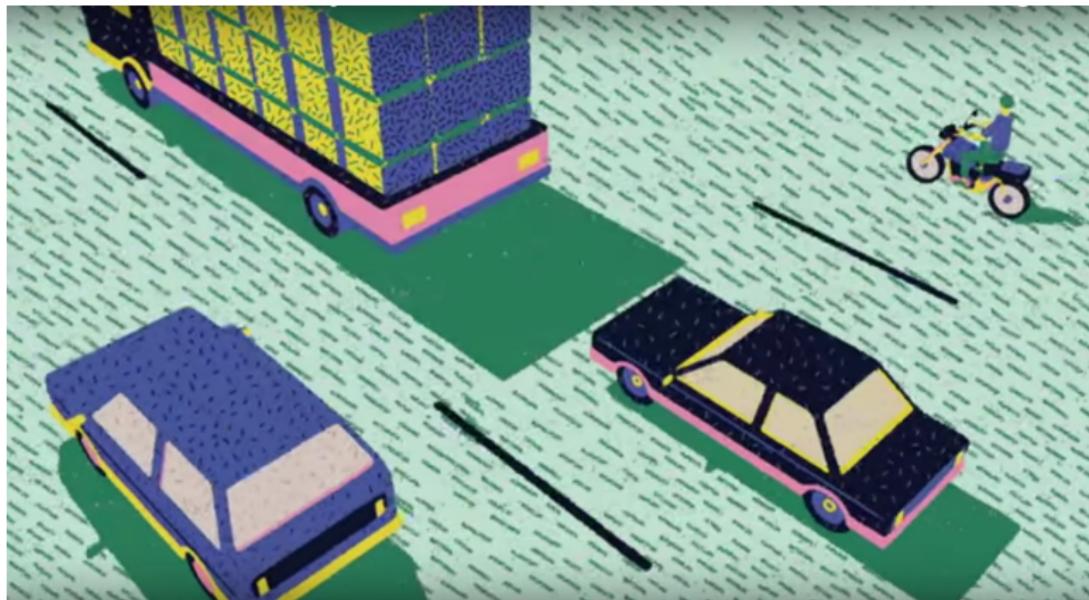


Figure: An Ethical Scenario.

Reaction vs Decision

- Humans react while machines decide

Ethical Automation: Trust in Automation



Conclusion

- These moral dilemmas are too complicated and too controversial to decide

Ethical Automation

Self-Driving Cars

- Do you watch cop shows, crime drama and action flicks?

Reaction time!

- Human reaction time is 2.3 seconds
- Airplane 45 seconds
- Car 2.3 seconds

This is not enough time for;

- A human to realize something is wrong.
- Decide what to do
- Take over control
- Take action

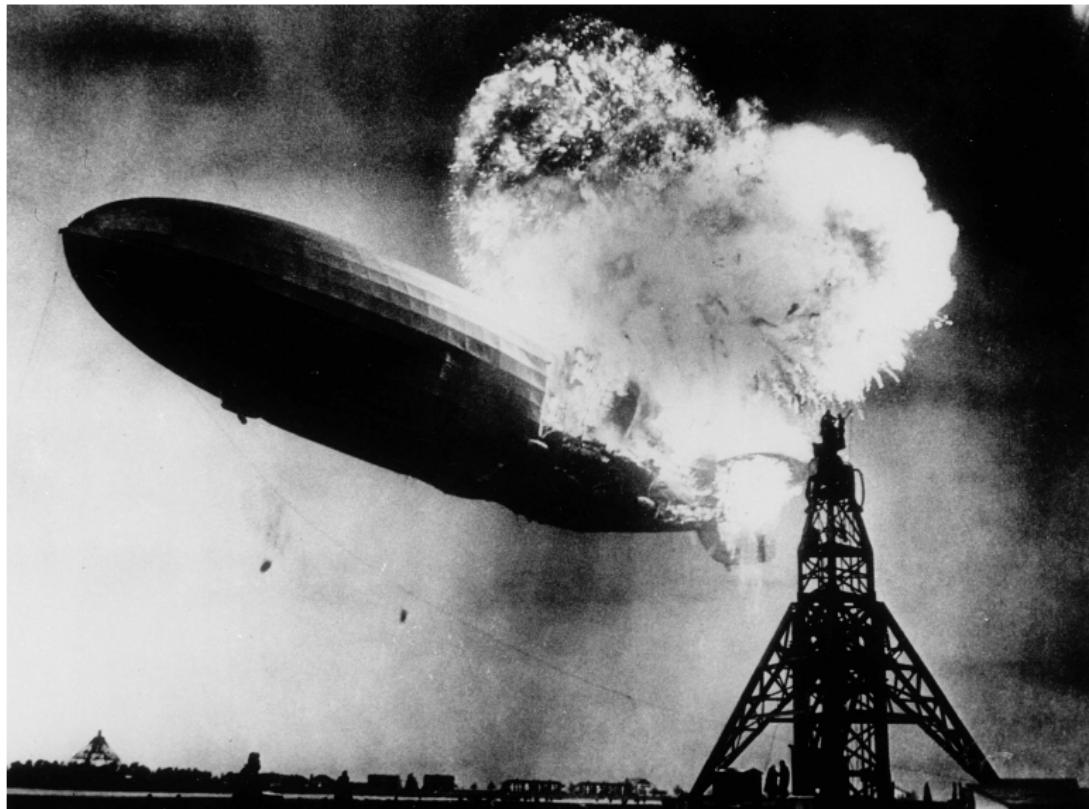
Ethical Automation: Trust in Automation

Driver or AI?



Ethical Automation: Trust in Automation

Mass paranoia?



Ethical Automation: Trust in Automation

Are we asking the right questions?



Ethical Automation: Conclusion

- Consequences of automation
- Big changes are coming
 - We've got to talk about it now,
 - We've got to talk about it a lot.

Questions?