Only Humans Need Apply: Adding Value to the Work of Very Smart Machines

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Many Roads Lead to Automation

- Expensive labor
- Too much data
- Tedious work
- Humans poor decision-makers
- Powerful technologies
Is Knowledge Work Next to Go?

18th-19th C. 20th C. 21st C.

Mechanical Systems

Transactional Computers

Cognitive/Analytical Computers

Manual Labor Jobs

Admin/Service Jobs

Knowledge Work Jobs
My Answer Is…Yes…and No

► Many knowledge work job *tasks* are at risk of being automated

► Some knowledge workers will lose their jobs, but it will be on the margins
  ▶ We’ll need 8 lawyers instead of 10

► Job loss will happen slowly

► There are going to be a lot (no one knows how many) of jobs working alongside smart machines

► We’ll have plenty of productivity gains, so we can afford to retrain and redeploy people if we want to

► But there is no room for complacency!
Ten Automatable Knowledge Work Jobs

1. Teacher/Professor—online content, adaptive learning
2. Lawyer—e-discovery, predictive coding, etc.
3. Accountant—automated audits and tax
4. Radiologist—automated cancer detection
5. Reporter—automated story-writing
6. Marketer—programmatic buying, focus groups, personalized e-mails, etc.
7. Financial advisor—”robo-advisors”
8. Architect—automated drafting, design
9. Financial asset manager—index funds, trading
10. Pharmaceutical scientist—cognitive creation of new drugs
The Impact on People: Automation or Augmentation?

Augmentation—smart humans helping smart machines, and vice-versa

People do this by aiding automated systems that are better than humans at their particular tasks, or by focusing those tasks at which humans are still better.

The classic augmentation example: freestyle chess

Better than humans or automated chess systems acting alone

Humans can choose among multiple computer-recommended moves

Humans know strengths and weaknesses of different programs
Five Ways of Stepping

- **Step in**—humans master the details of the system, know its strengths and weaknesses, and when it needs to be modified.

- **Step up**—humans take a big-picture view of computer-driven tasks and decide whether to automate new domains.

- **Step aside**—humans focus on areas they do better than computers, at least for now.

- **Step narrowly**—humans focus on knowledge domains that are too narrow to be worth automating.

- **Step forward**—humans build the automated systems.
The Five Augmentation Steps in Insurance Underwriting

- **Step in**—underwriters become experts in rule-based and other underwriting tools, and modify them when necessary
- **Step up**—underwriters become portfolio managers, assess the macro-structure of risk, and monitor need for change in rules or models
- **Step aside**—underwriters focus on agent and customer communications
- **Step narrow**—underwriters specialize in areas that are too narrow to automate, e.g., business insurance for dry cleaners
- **Step forward**—underwriters (or insurance-oriented programmers) build the automated systems for P&C underwriting companies or vendors
Implications for Organizations

- Take an augmentation perspective from the beginning
- Pick the right cognitive technology for your problem
- Get good at work design for smart humans and smart machines
- Give your people the options and the time to transition to them
- Put someone in charge of thinking about this