Topics:

- Work and Automation
- Transportation

- The impact of automation, in general, and AI, in particular, on the nature of work and employment has been widely studied by economists and sociologists - but no consensus conclusions.
- Some claim that AI, including robotics, will lead to large-scale unemployment.
- Others claim that many new job categories will develop based on AI-enabled innovation.
- A better frame: any particular job requires a suite of skills. Some of those skills may indeed be rendered redundant.
- Other skills may become more necessary and may also require upgrading.
- Disintermediation eliminates many job categories but also requires "upskilling" other job categories.

Work and Automation - 2

- Business decisions require prediction and judgment.
- Machine learning is now enabling automated prediction so human judgment and decision analysis skills become relatively more valuable.
- AI and related technologies are creating many new job categories.
- The new post-industrial high-tech corporations typically employ many fewer people than corporations, with similar market size, based in the older industrial economy.
- AI is now permeating the entire economy.
- AI-related jobs being created in the older industrial corporations such as the auto industry and other manufacturing sectors as well as in the health, legal, education, entertainment, video game, and financial sectors.

Work and Automation - 3

- Perhaps fewer people will be required to produce society's goods and services.

- AI could generate so many significant new wealth opportunities that a universal basic income (UBI) guaranteed to everyone, without qualification, is possible, and necessary, to redistribute some of that wealth equitably.

- The argument for UBI is that AI will reduce the need for much manual and mental labour, so the human rights to housing and sustenance should not be tied entirely to employment income. This could allow more creative leisure time and informal caregiving.

- The employment picture is changing significantly, disrupted by AI.

- Radical changes in the nature of retail shopping and employment

Work and Automation - 4

- The gig economy allows AI-enabled scheduling and organizing of the resources needed for just-in-time ordering and delivery of consumer goods and services, including ride-hailing and food delivery.

- A permanent full-time job with a single employer for life is no longer the standard model.

- The gig economy has the benefit of flexibility, for both the employee and the employer.

- On the downside, workers are losing the advantages and protections of organizing in unions, including security of employment, bargaining for wages and salaries, and benefits such as vacations, paid sick leave, pensions and health care coverage (if it is not universal).

- Enhancements to government legislation, regulation, and enforcement are being proposed to cope with these emerging challenges.

- Transportation, of people and cargo, is a key sector of the economy, satisfying a variety of social needs.
- Useful case study to examine the social and economic impact of AI
- Autonomous vehicles are being developed and deployed.
- The technologies used for accurate positioning in self-driving vehicles - see Section 9.8
- Ethical choices surrounding self-driving cars - see Section 2.4
- Role of preferences in automated route planning - see Section 3.9
- Using constraints to schedule deliveries by a fleet of vehicles - see Section 4.9

Transportation - 2

- Positive impact of having intelligent cars and trucks could be large.
- Safety aspect of reducing the annual carnage on the roads
- About 1.2 million people are killed, and more than 50 million are injured, in traffic accidents each year worldwide.
- Vehicles could communicate and negotiate at intersections. Besides the consequent reduction in accidents, there could be up to three times the traffic throughput [Dresner, 2008].
- Improvements in road usage efficiency come both from intersection management and from platooning effects. Automated, communicating vehicles can safely follow each other closely because they can communicate their intentions before acting and they react quicker than human drivers.
- That not only decreases the capital and maintenance costs of highways, but has ecological savings of using highways so much more efficiently instead of paving over farmland, forests, or wilderness.

Transportation - 3

- With full autonomy, elderly and disabled people would be able to get around on their own, without a driver.
- People could dispatch vehicles to the parking warehouse autonomously and then recall them later
- Individual car ownership could become mostly obsolete.
- Most private vehicles are used only about 5% of the time.
- Better fleet utilization would reduce the demand for vehicle production and storage.
- Automated robotic warehouses could store vehicles more efficiently.
- Overall, potential large positive impact on sustainability
- So far, [benefits of] full autonomy are mostly science fiction.

Transportation - 4

- Transition to a mixed transportation system of human drivers, autonomous vehicles, transit, pedestrians, cyclists, scooters, ... is challenging.
- Smart driving features such as self-parking, lane keeping, lane changing, adaptive cruise control, emergency braking, and automated avoidance of pedestrians and cyclists are now routine driver safety aids.
- Public transit, with intelligent crew and vehicle scheduling, and some autonomy is also improving.
- Autonomous vehicles are precursors to robot tanks, military cargo movers, and automated warfare.
- Possible benefits but also dangers and ethical issues surrounding autonomous weapon systems and robotic warfare.