

# The fourth industrial revolution and the employment challenge

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# FIRe in the workplace: should we be afraid?

- Fourth Industrial Revolution (FIRe): the current wave of technological advancement characterized by the interconnection via digital networks of all processes of modern production and distribution.
- Promise of greater productivity, lower costs, higher growth but also risks to employment, incomes, personal security, and inclusivity

## Two FIRE-related facts

- Substitution of computer-enabled processes for labor in manufacturing and services (e.g. robotization)
- Emergence of various non-standard forms of employment (the “gig economy”)

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# Forecasting the future of work

- Evidence does not support claim of majority of jobs being lost to automation.
- Technological change creates jobs, too, via several channels.

# The task approach

- A job consists of several tasks.
- Skills are used to perform tasks that, when combined, generate output.
- Tasks can be performed by domestic labour, foreign labour (offshoring), or capital depending on cost considerations and comparative advantage.

## The task approach

*Technology usually changes work by changing how specific tasks are performed.*

Levy and Murnane (2013)

**Figure 1: Varieties of Computer Information Processing<sup>10</sup>**

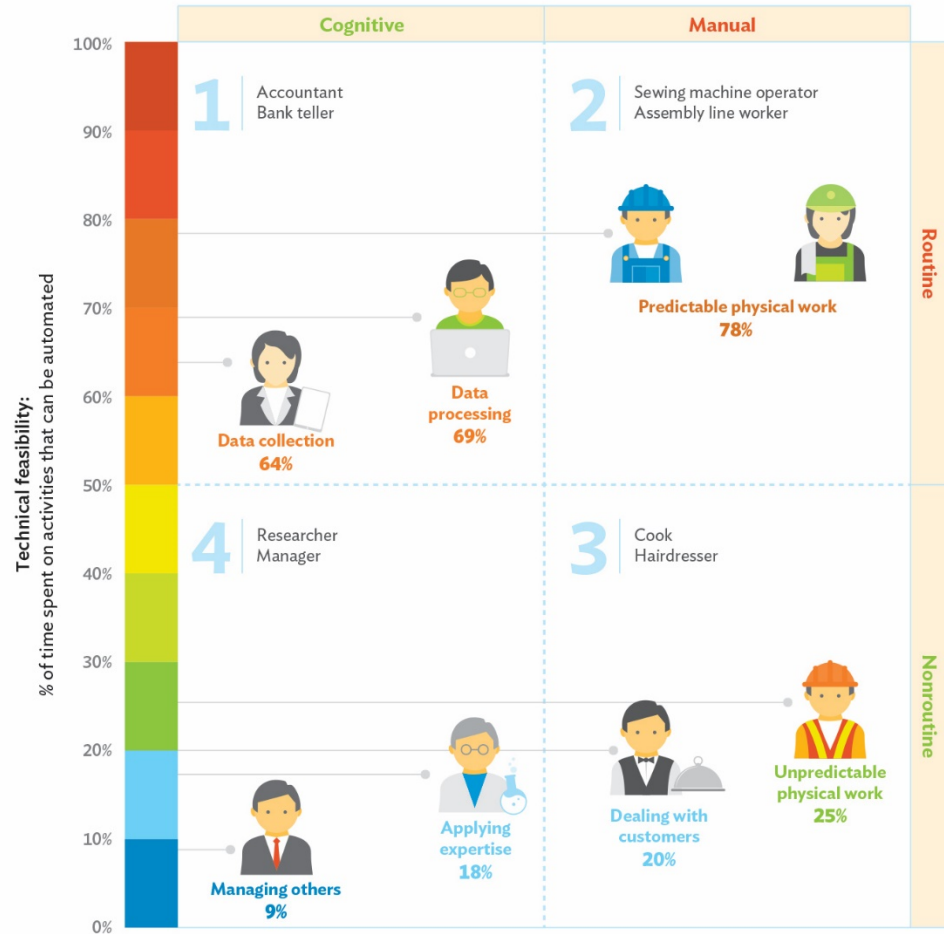
Increasingly Difficult to Program



	<b>Rules-Based Logic</b>	<b>Pattern Recognition</b>	<b>Human Work</b>
<b>Variety</b>	Computer Processing using Deductive Rules	Computer Processing using Inductive Rules	Rules cannot be Articulated and/or Necessary Information cannot be Obtained
<b>Examples</b>	Calculate Basic Income Taxes Issuing a Boarding Pass	Speech Recognition Predicting a Mortgage Default	Writing a Convincing Legal Brief Moving Furniture into a Third Floor Apartment



## 2.1.9 Impact of automation on jobs



Note: Percentages are from Frey and Osborne (2017) estimates on probability of automation. Framework is based on Acemoglu and Autor (2011).

Source: ADB (2018)

# The task approach

- Computerization of routine job tasks leads to job polarization where jobs that are intensive in cognitive and manual tasks – on either end of the skill spectrum – account for the majority of jobs.
- This is confirmed by a large body of US and international evidence at the level of industries, localities, and national labour markets.

# Share of U.S. Workers in Low, Medium, and High Skill Occupations: 1979 and 2016

**1979**

Low Skill  
**13.7%**



Medium Skill  
**61.1%**

High Skill  
**25.2%**

**2016**

Low Skill  
**25.2%**



Medium Skill  
**43.2%**

High Skill  
**38.6%**

		2003	2006	2009	2012	2015
<b>TOTAL EMPLOYED</b>		<b>80,363</b>	<b>76,606</b>	<b>73,557</b>	<b>79,649</b>	<b>82,841</b>
Skill Level	% Share of Occupation					
-	Government officials and managers	11.92	12.06	14.53	16.09	16.76
4	Professionals	4.05	4.33	4.42	4.93	5.17
3	Technicians and associate professionals	2.76	2.74	2.71	2.79	2.63
2	Clerks	4.13	4.91	5.30	5.72	6.71
2	Service workers and shop and market sales workers	9.26	9.79	10.76	12.63	13.03
2	Farmers, forestry workers, and fishermen	18.39	17.65	15.37	12.68	11.45
2	Craft and related trades workers	9.06	8.09	7.72	6.77	6.77
2	Plant and machine operators and assemblers	7.48	7.72	6.10	5.27	5.45
1	Elementary occupation: laborers and unskilled workers	32.54	32.28	32.66	32.88	31.73
-	Special occupations	0.42	0.43	0.43	0.25	0.29
	<b>TOTAL</b>	100.0	100.0	100.0	100.0	100.0

Skill Level	2003	2006	2009	2012	2015
4	4.05	4.33	4.42	4.93	5.17
3	2.76	2.74	2.71	2.79	2.63
2	48.31	48.16	45.25	43.07	43.41
1	32.54	32.28	32.66	32.88	31.73
-	12.34	12.49	14.96	16.34	17.05

# The gig economy

- An environment in which jobs are short-term, workers are predominantly independent contractors, and no employer-employee relationship exists between the contracting parties
- Attraction is in freedom, flexibility, being own boss, and higher income
- No estimate exists on the size of the gig economy in the Philippines.

# The gig economy

- Disadvantages include unemployment risk, lack of social protection cover, absence of non-wage benefits and pension
- Issues are not new; generally true for non-regular workers







## Number of Agency-Hired Workers

Year	Agency-Hired Workers
2003	316,423
2008	364,210
2010	341,703
2012	518,101
2014	621,905

## What industries employ agency-hired workers?

Major Industry Groups	Agency-Hired Workers
Agriculture, Forestry and Fishing	43,955
Industry	285,491
Services	292,459
Total	621,905

# What industries employ agency-hired workers?

Industry/Sector	Agency-Hired Workers
<b>Industry</b>	285,491
Mining and Quarrying	9,073
Manufacturing	244,538
Electricity, Gas, Steam and Airconditioning Supply	22,260
Water Supply; Sewerage, Waste Management and Remediation Activities	3,119
Construction	6,500

# What industries employ agency-hired workers?

Industry/Sector	Agency-Hired Workers
<b>Services</b>	292,459
Wholesale and Retail Trade; Repair of Vehicles and Motorcycles	90,763
Transportation and Storage	19,944
Accommodation and Food Service Activities	43,354
Information and Communication	18,153
Financial and Insurance Activities	33,781
Real Estate Activities	13,551
Professional, Scientific and Technical Activities	7,971
Administrative and Support Services Activities	17,060
Education except Public Education	26,906
Human Health and Social Work Activities except Public Health Activities	12,009
Arts, Entertainment and Recreation	7,364
Repair of Computers and Personal and Household Goods; Other Personal Service Activities	1,602

## Establishments engaging agency-hired workers?

Major Industry Groups	Work Done Inside Premises	Work Done Outside Premises
Agriculture	662	319
Industry	5,669	1,293
Services	15,321	3,364
Total	21,650	4,978

# What services are usually contracted out?

Services	Agency-Hired Workers	Services	Agency-Hired Workers
Security Services	162,453	IT Services	5,544
Production/ Assembly	160,355	Messengerial	5,313
Janitorial Services	66,433	Finance/ Accounting	5,258
Repair/ Maintenance/ Construction	33,134	Data Processing/ Encoding	3,189
Food Service/ Catering	27,600	Medical and Health Services	2,650
Marketing Sales	25,554	Human resource	2,236
Packaging	23,246	Billing/Payment	1,702
Warehousing	17,475	Research and Development	1,510
General Administrative	16,362	Learning/ Training	422
Logistics/ Transport	9,918	Others	42,073
Cashier	9,482		

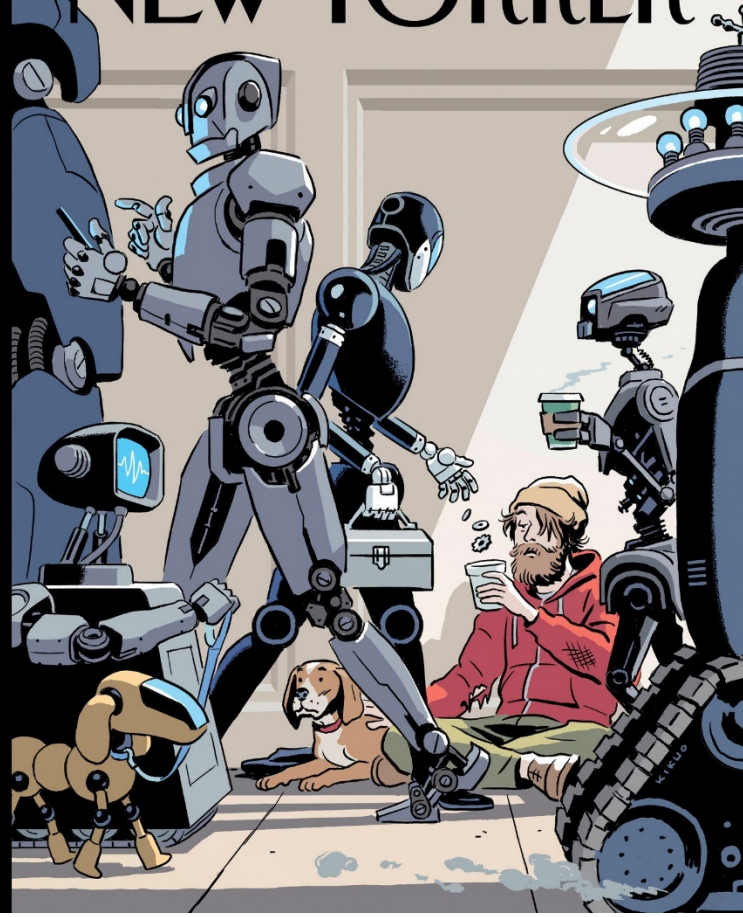
# Conclusion

- Risk of unemployment and income loss for workers has increased with technological change and globalization.
- Technological and organizational changes brought about by FIRE call for a re-thinking of labour policies and laws.

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# THANK YOU!



