



Technology at work: The future of employment

Michael A Osborne @maosbot



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Robots

Millions of UK workers at risk of being replaced by robots, study says

Workers in wholesale and retail sectors at highest risk from breakthroughs in robotics and artificial intelligence, PwC report finds

Advertisement
PARIS

f t e ...
This article is 5 months old

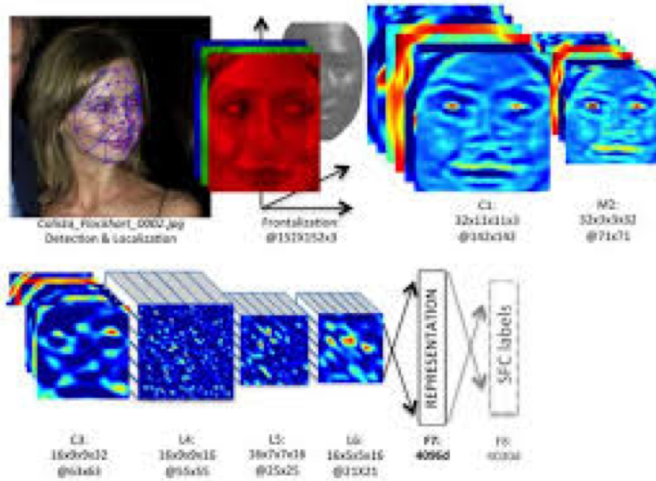
workplaces. But that doesn't mean...
of being replaced by robots, according to a new study. In part, that's...
because U.S. employers are buying automation tools and equipment

Snapdragon
835 Mobile Platform

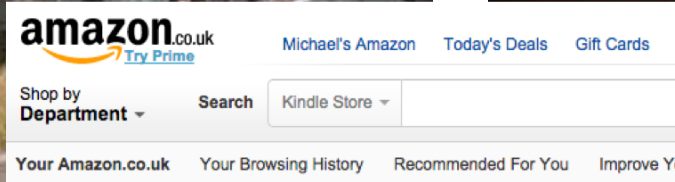
FORD
RTIN
POOL

Machine Learning is only effective where a task can be sufficiently well-defined.

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Retail and sales jobs will be increasingly affected by automation.



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1.



The Innovators:
by Walter Isaacson
Average Customer
Available for down



“People should **stop training radiologists now**. It is just completely obvious that within five years, **deep learning is going to do better than radiologists.**”

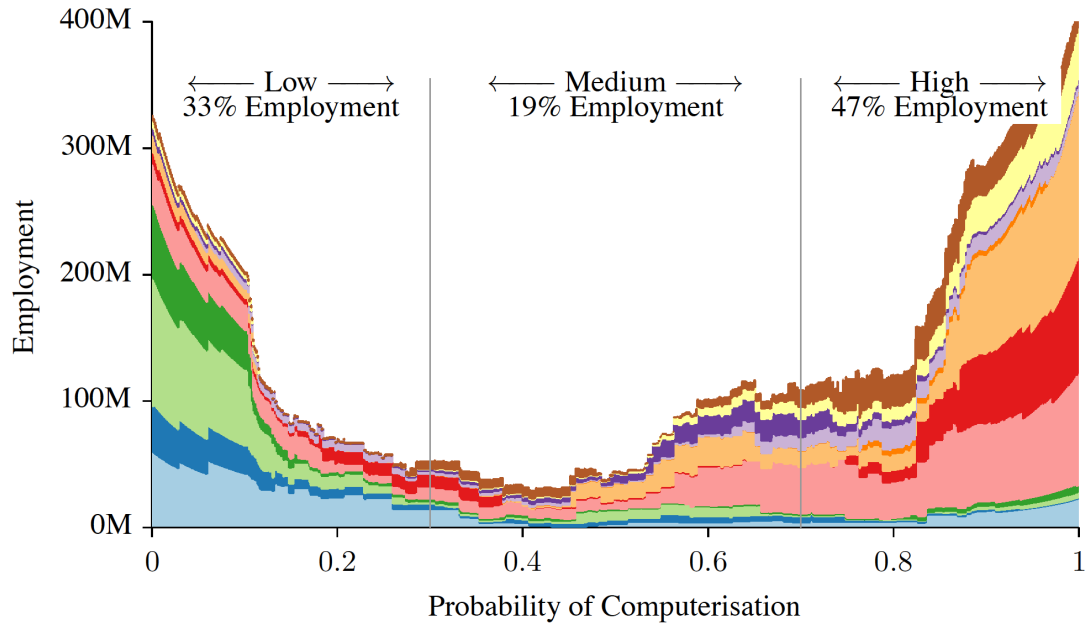
Geoff Hinton, Google and University of Toronto (Nov 2016)

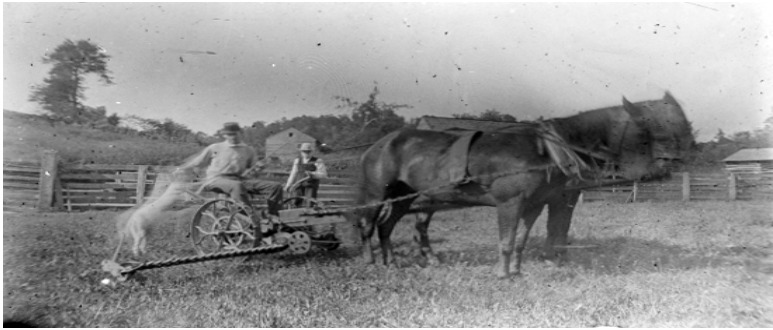
Many **logistics tasks** are now being automated with the use of machine learning and mobile robotics technologies.



USA

- Management, Business, and Financial
- Computer, Engineering, and Science
- Education, Legal, Community Service, Arts, and Media
- Healthcare Practitioners and Technical
- Service
- Sales and Related
- Office and Administrative Support
- Farming, Fishing, and Forestry
- Construction and Extraction
- Installation, Maintenance, and Repair
- Production
- Transportation and Material Moving



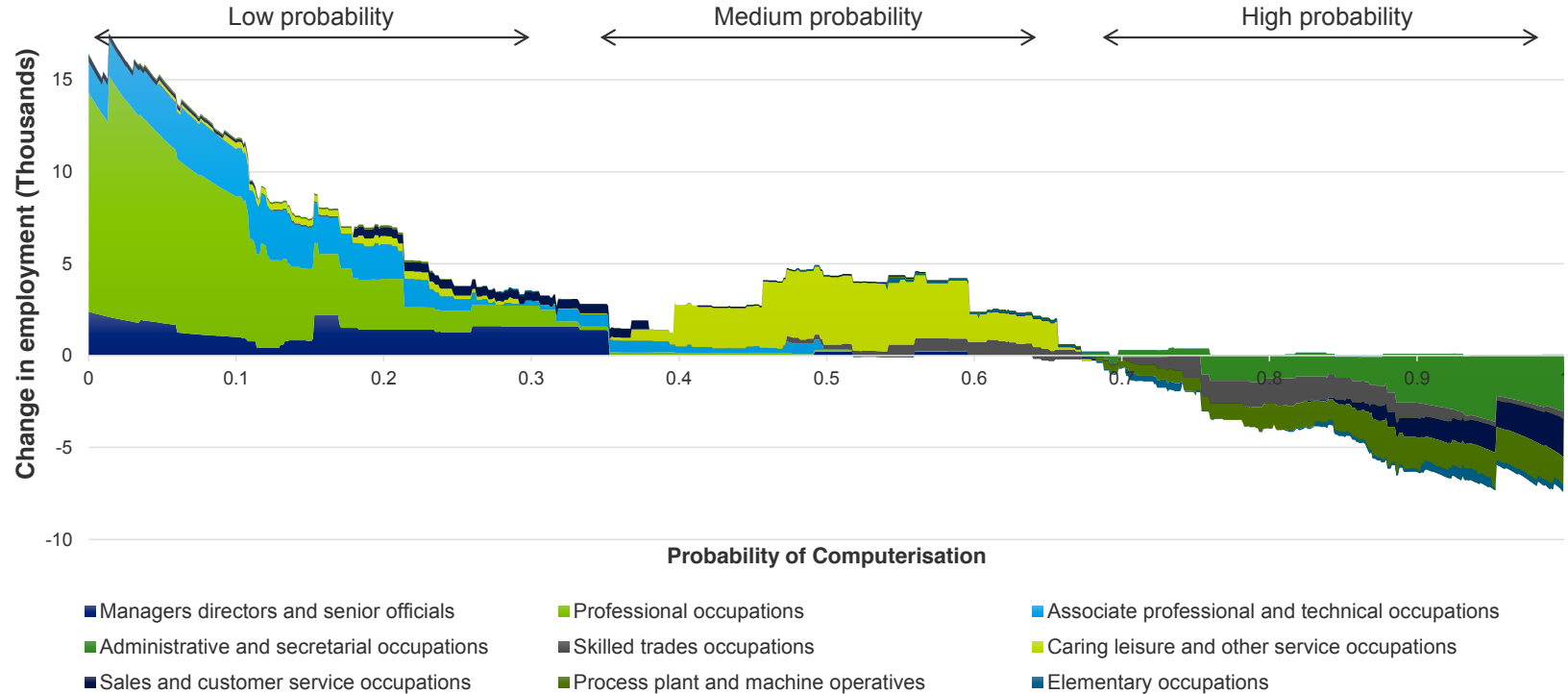


In 1900, 40% of US workers were farmers; in 1999, the figure was 2%.

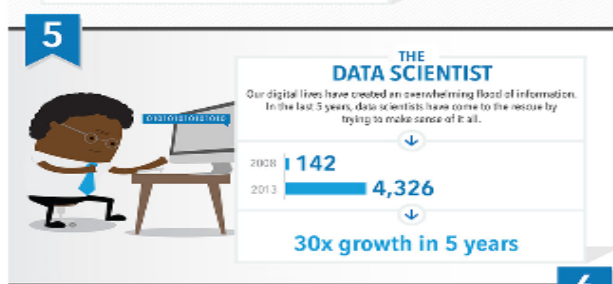
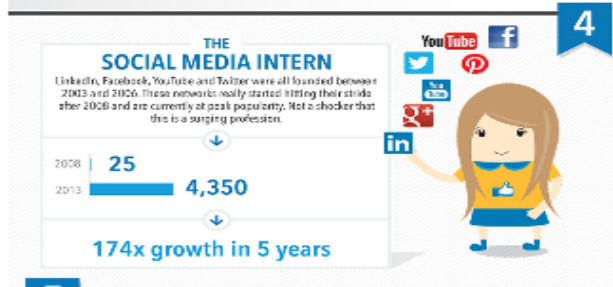
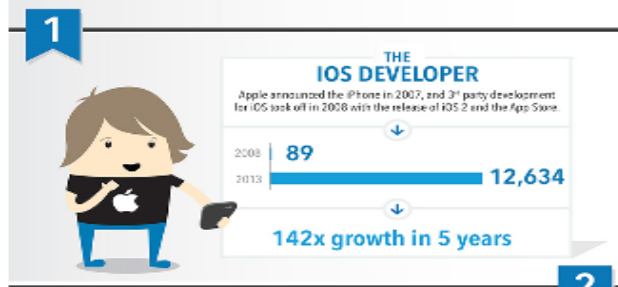
In 1900, unemployment was 5%; in 1999, it was 4.2%.

Will new technologies threaten the historical pattern of employment resisting technological change?

UK, 2000-2015



New occupations are being created.





Our new research considers the **pace of change in labour markets**, rather than the scope of automation. We consider:

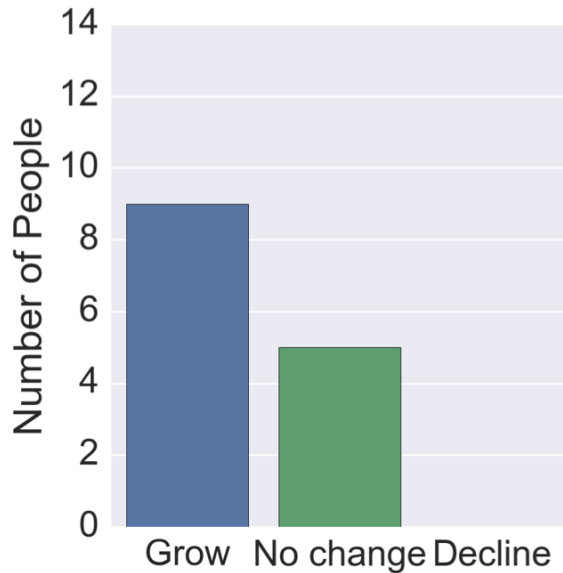
- Technological change;
- Globalisation;
- Demographics;
- Environmental sustainability;
- Urbanisation;
- Increasing inequality; and
- Political uncertainty.

OXFORD
MARTIN
SCHOOL

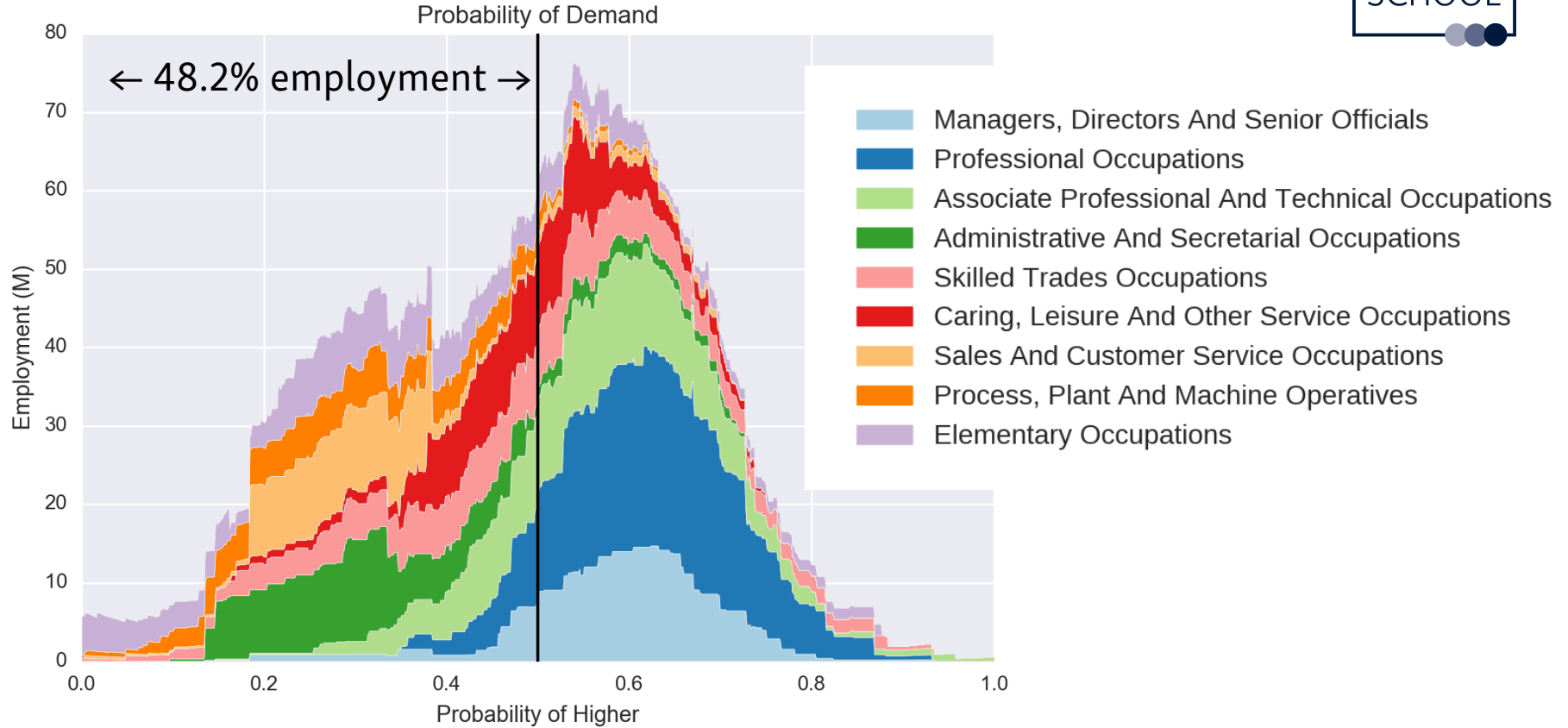


| Rank | Occupation | Labelled in workshop? | Probability of higher employment | Employment, 2016 ('000s) | OXFORD MARTIN SCHOOL |
|------|---|-----------------------|----------------------------------|--------------------------|---|
| 1. | Artists | Yes | 0.94 | 56 |   |
| 4. | Publicans and managers of licensed premises | | 0.83 | 41 | |
| 9. | Waiters and waitresses | Yes | 0.78 | 283 | |
| 44. | Architects | | 0.63 | 44 | |
| 107. | Nurses | | 0.63 | 675 | |
| 213. | Further education teaching professionals | Yes | 0.46 | 87 | |
| 252. | Taxi and cab drivers and chauffeurs | | 0.39 | 232 | |
| 311. | Receptionists | | 0.25 | 233 | |
| 319. | Book-keepers, payroll managers and wages clerks | | 0.25 | 390 | |
| 364. | Shelf-fillers | Yes | 0.06 | 100 | |

Waiters and waitresses are predicted to increase in demand despite automatability.

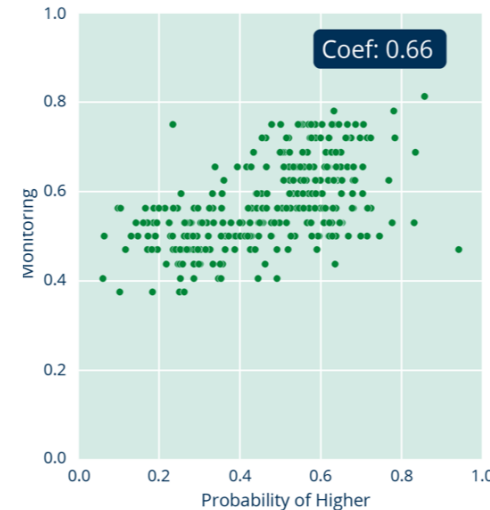
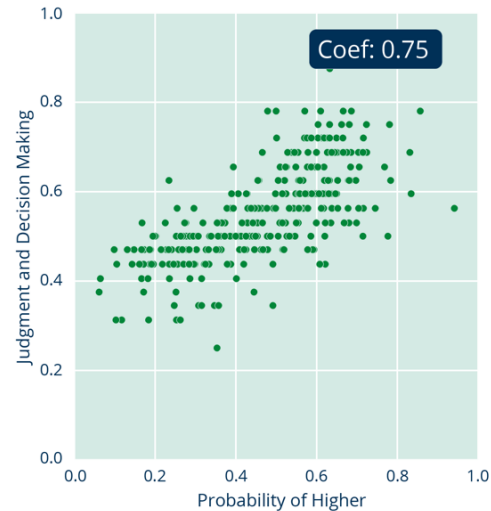


- “In theory: more automation; in practice, waiters are the human face of the business which commands premiums as a result.”
- “Productivity improvements are just enough to keep up with rising demand”
- “Cheaper than robots, demand for hospitality increases”



Increasing demand is most closely linked to advanced cognitive skills.

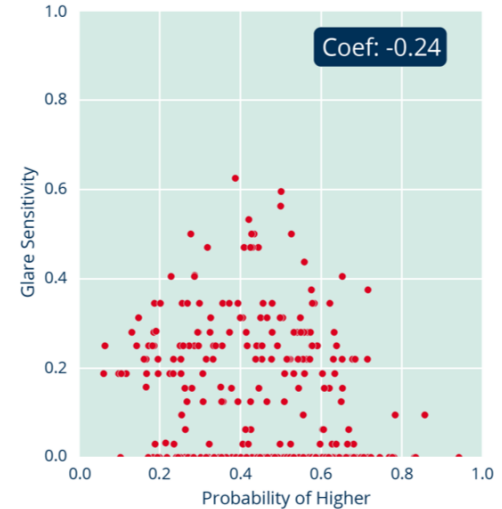
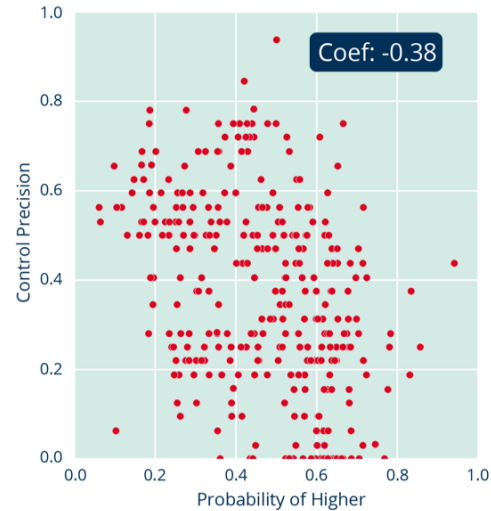
- 1 Judgement and Decision Making
- 2 Fluency of Ideas
- 3 Active Learning
- 4 Systems Evaluation
- 5 Originality
- 6 Learning Strategies
- 7 Deductive Reasoning
- 8 Complex Problem Solving
- 9 Systems Analysis
- 10 Monitoring



Decreasing demand is most closely linked to physical and psycho-motor skills.



- 1 Control Precision
- 2 Static Strength
- 3 Manual Dexterity
- 4 Rate Control
- 5 Peripheral Vision
- 6 Multi-limb Coordination
- 7 Night Vision
- 8 Operation and Control
- 9 Sound Localisation
- 10 Glare Sensitivity



We describe features that are **complementary** to occupational groups.



| SOC | TITLE | CURRENT FEATURES | COMPLEMENTARY FEATURES |
|------------|--|--|--|
| 7200 | Customer Service Occupations | Customer and Personal Service Oral Expression Oral Comprehension | Judgment and Decision-Making Fluency of Ideas Originality |
| 5300 | Skilled Construction and Building Trades | Building and Construction Manual Dexterity Arm-Hand Steadiness | Gross Body Equilibrium Sales and Marketing Gross Body Coordination |
| 2400 | Business, Media and Public Service Professionals | English Language Oral Expression Oral Comprehension | Science Operations Analysis Originality |

We also identify likely **new occupations**.

| NEW OCCUPATIONS | FEATURE RANK | | | | |
|--------------------|-----------------|----------------------|-------------------------------------|----------------------|------------------------|
| | 1ST | 2ND | 3RD | 4TH | 5TH |
| 1 | Fine Arts (K) | Originality (A) | Design (K) | Fluency of Ideas (A) | Visualization (K) |
| 2 | Originality (A) | Fluency of Ideas (A) | Judgment and Decision-Making (S) | Active Learning (S) | Oral Expression (A) |

We also identify likely **new occupations**.



Artists



Merchandisers &
Window Dressers



Photographers, audio-
visual & broadcasting
equipment operators



Tailors &
Dressmakers



Florists



Catering & Bar
Managers



Publicans &
Managers of
licensed premises



Managers &
Directors in retail
& wholesale



Sales Supervisors



Chefs

Robots taking our jobs?

Take action to skill up for the
jobs of the future!