

# Powering Society

## Engineering at Swinburne

# Engineering

Civil

Mechanical

Electrical

**YOU'LL KNOW**

# How we communicate in 2016

- Smartphones are everywhere
  - In 2014, 132 phones per 100 people in Australia
  - 64.4% market penetration
- Internet usage is normal:
  - 83% of the Australian population is on the internet
  - Average 6 hours internet usage per day (worldwide)
- All of this is underpinned by Electrical Engineering

# Direct impacts

## **Banking**

- Online/apps
- Electronic money – Bitcoins, EFTPOS

## **TV/Media industries**

- Live streaming
- Video-on-demand
- Ultra HDTV
- Big Bash captain commentary

## **Mining**

- Asset tracking for financial and OH&S reasons

## **Automotive**

- Driverless cars

## **Marketing**

- Live chat
- Digital advertising

## **Gadget industry**

- Fitbit
- Smart phones
- Games consoles

## **Health industry**

- Synthetic body parts
- Tele-medicine

## **Energy**

- Solar cells
- SmartGrid
- Wind farms

# Indirect impacts

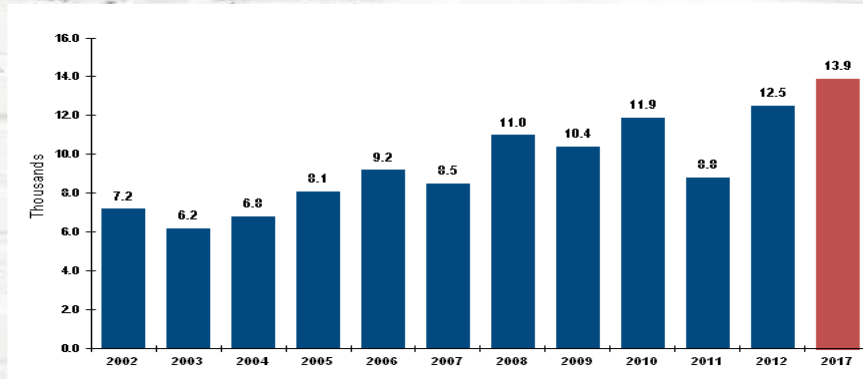
- Online Security
- Online privacy and piracy
- Drones in backyards
- Synthetic body parts – usage and ethics
- Jobs we're training students for that haven't been thought of yet

<b>Occupation</b>	<b>Project employment growth – 5 years to Nov 2019</b>
Engineers	6.9
Chemical and Materials Engineers	5.1
Civil Engineering Professionals	7.7
Electrical Engineers	8.2
Electronics Engineers	22.1
Industrial, Mechanical and Production Engineers	12.7
Mining Engineers	-13.3
Other Engineering Professionals	8.1
Construction, Production and Distribution Managers	9.7
Construction Managers	17.1
Engineering Managers	-10.2
Technical Sales Representatives	15.1



# Industry outlook and employment prospects

- Employment for Telecommunications Engineering, Electrical Engineering to November 2017 is expected to grow strongly
- Very high proportion of full-time jobs (94.4%)



Data from [joboutlook.gov.au](http://joboutlook.gov.au)

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# Employers in Melbourne

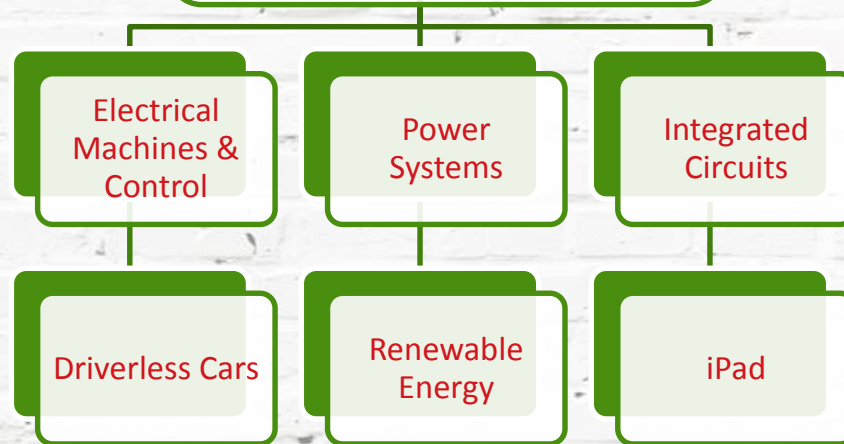


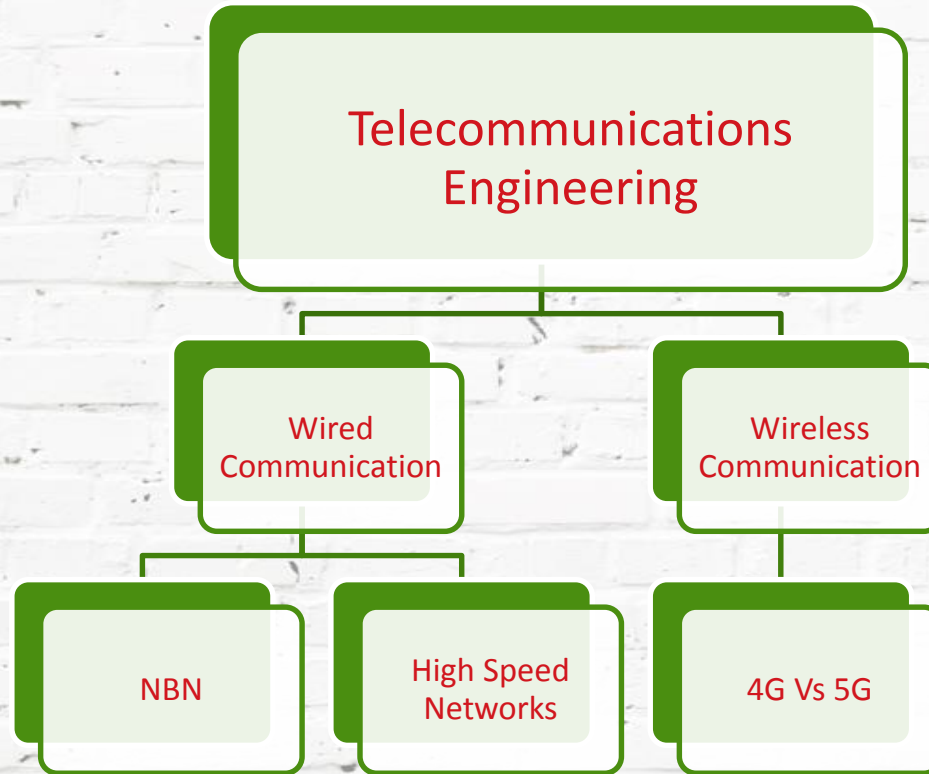
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# Internships

Djuro Mirkovic, Swinburne student

# Electrical & Electronic Engineering





# Robotics & Mechatronics Engineering

Automation

Drones

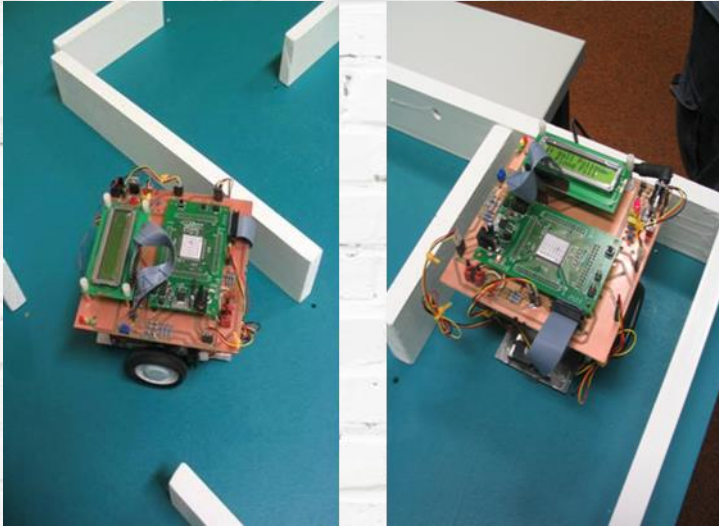
Mars Rover

Robotic  
Vacuums

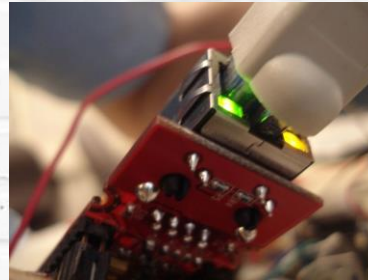
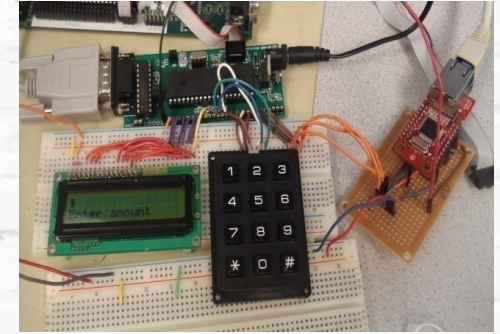
Humanoid  
Robots

# Final-year projects

## Maze Mouse



## Digital receipt system

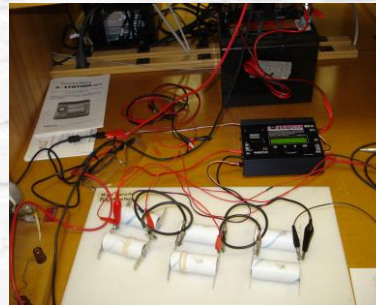
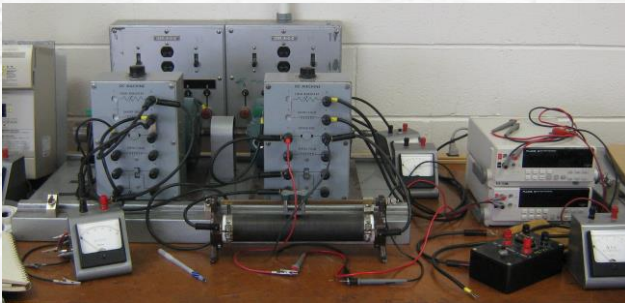


## Magnetic card reader

# Final-year projects

## Electric Motor Control with regenerative braking

Objective: Develop effective cell configuration and interconnections to yield compact medium-power battery with appropriate capacity



# Engineering student groups

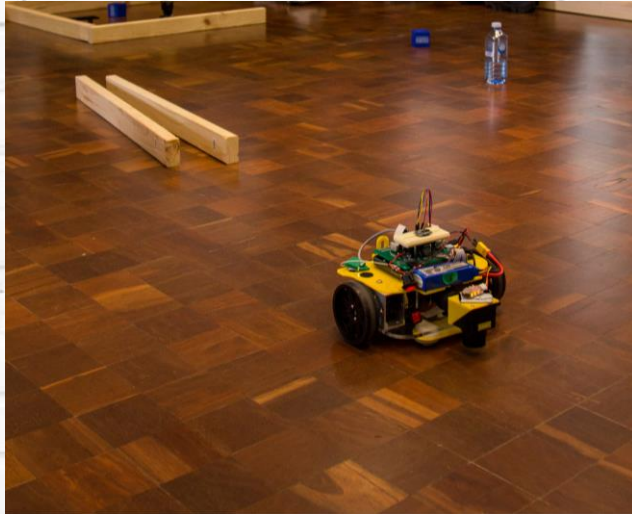
- Women in Engineering
- Engineers without Borders
- Engineers Australia – Swinburne chapter
- Swinburne Tinkerer's Guild
- Team Swinburne Formula SAE
- Young Engineers Social Club
- Swinburne 3D Printing Club
- Engineering Technical Society
- TCP/IP (Telecommunications Club)





# Real-world applications

- Engineering Ball Circuit display
- NI Autonomous Robotics competition



Questions?