## Actuation, Sensing & Control in Collaborative Robots Waleed Farahat







## Collaborative robots

- Robots working side by side with humans
- Safe to physically interact with, uncaged
- Easy to train, teaching by demonstration
- Inexpensive to acquire and deploy

## Underlying engineering ingredients

- Modeling and control of mechatronic systems
- Compliant actuation, force control and haptics
- Motion planning and optimization
- Perception and estimation

