An Assistive Robot Feeding System: Opportunities and Challenges
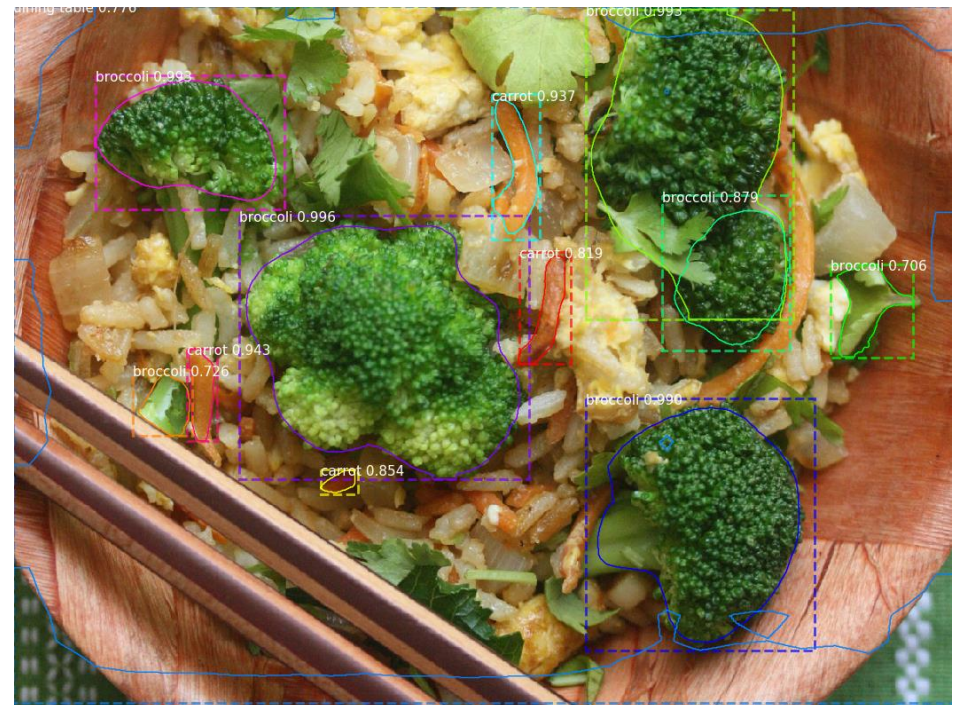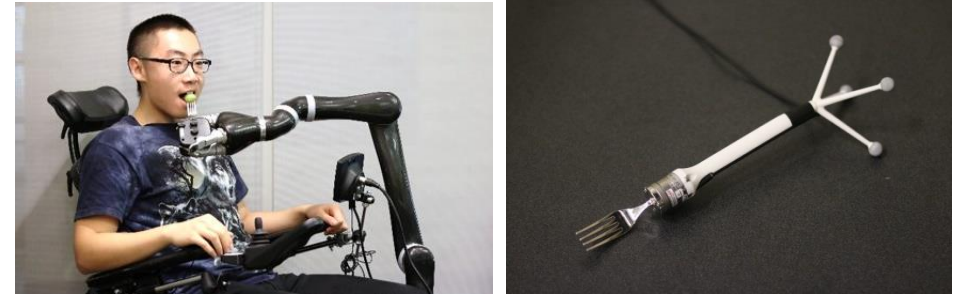
Why this problem?

- A high impact task:
  - An activity of daily living (ADL)
  - 56.7 million people had disability (Brault, 2012)
  - 12.3 million people needed assistance with ADLs (Perry, 2008)

- A hard problem:
  - Bite Acquisition: Food perception, Manipulating deformable objects
  - Bite Timing: Understanding the cadence of social dining

Questions we ask:

- How to integrate multiple modalities for activity recognition and perception? What data is relevant?

Lessons Learned:

- A clever algorithm is only useful if it addresses the user's needs.
- User studies can reveal interesting insights, which can sometimes be surprising.

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A Recent Work on Mask R-CNN (He et al., 2017)