What do flying cars have in common with medical robotics?

Missy Cummings

Duke University
- Complex, time-pressured, high risk domains
- Systems require embedded automation/autonomy with human supervision
- Individuals & teams
How do we decide if/when to replace a human with a robot?

The real problem...
SRKE Taxonomy

Automation more capable (for now)

Expertise

Knowledge

Rules

Uncertainty

Skills

Automation more capable (for now)
SRKE continuum for medical applications

- **Knowledge**
- **Expertise**
- **Uncertainty**
- **Rules**
- **Skills**

Automation more capable (for now)
Understanding human strengths and limitations

4.5 pilots asked to name the 3 ways approach mode is disengaged – 7 pilots couldn't name any, 7 knew 1, 3 knew 2, 3 knew 3 – 14 named a non-existent method.

Performance of the Tesla Model S.
Understanding AI strengths and limitations

Understanding autonomy limitations
Questions?