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## CPS: Small: Collaborative Research:

### RF Sensing for Sign Language Driven Smart Environments

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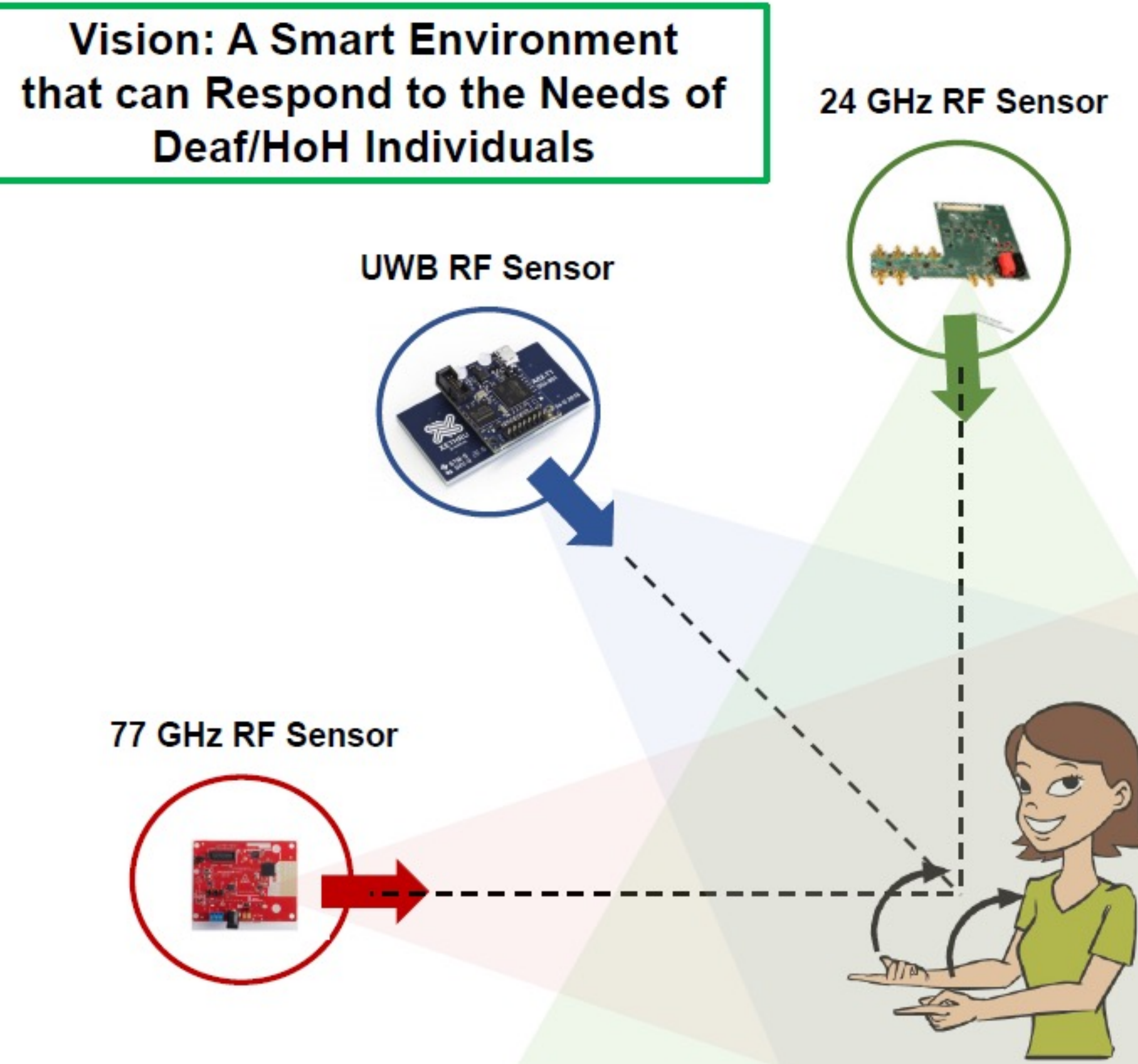
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#### Challenge:

- Design non-intrusive, ambient RF-enabled personal assistants and smart environments

#### Solution:

- Physics-aware machine learning techniques to improve accuracy with minimal training data
  - Joint domain multi-input multi-task learning that jointly optimizes kinematic constraints
  - Physics aware generative adversarial networks for training data synthesis



#### Scientific Impact:

- Advances AI/ML for RF sensing enabled CPHS, which can impact automotive autonomy, health, security and HCI

#### Broader Impact:

- Increased access to technology for the Deaf community and ASL users
- Collaboration with Deaf community partners towards research and STEM education
- Recognition of 140 ASL words and sequential recognition in continuous RF data streams