Trust

A Human-centric Sensing Perspective

Requirements

- **R1**: Privacy-preserving Participation
  - Anonymity
  - Probabilistic privacy (cannot infer identity based on data)
  - Report unlinkability (cannot identify that two reports are from the same user)
- **R2**: Incentives
  - Must deliver incentive to user based on that user’s contributions
  - Prevent “freeloading” and discourage bad data
- **R3**: Communication integrity, confidentiality, and authentication
- **R4**: Authorization and access control
- **R5**: Mechanisms for data trust
  - May be based on device, user history, etc
- **R6**: Accountability
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An In-class Exercise

**Example: Parking (TruCentive)**

- Create a market for free parking spot data

**Requirements:**

- Minimize spam (users sending bad data)
- Offer incentives for sending good data
- Maintain fairness
  - Users should be rewarded for helping the system inform others of valid parking
  - Users should not be charged if the system did not help them
Example: Parking

- Give credit, $D$, for volunteering your parking spot data (location, time available, car info)
- Ask for parking spot tip at desired time and location. Get refunded, $R$, if information is wrong.
- Give additional credit, $X$, when parking spot data is confirmed by another user (who got the spot)
- User can re-sell parking spot info when leaving spot (if user confirmed parking there)

Example: Parking

- Must ensure that $D + pX > R > D$

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