Theme Motivation
Technology Available
Project Ideas
My own virtual assistant that I can trust and talk to in natural language!
Access Control via Natural Language

“Let my daughter watch Netflix between 6-8pm.”
“Let my father monitor my security camera for motion, if I’m not home”.

- Share sensitive information, IoTs, accounts, parental control, …
- Who is allowed?
- What actions?
- Filter on data values
- External conditions
Sharing Through a Virtual Assistant with Privacy

Security: Only the owner’s assistant has the credential to run Netflix

“Play Star Wars from my Dad’s Netflix on the TV”
Secure Remote Execution

Security: The program is read back to the owner for approval

“Maggie wants to play Star Wars from Netflix on the TV”

“Play Star Wars from my Dad’s Netflix on the TV”

Remote ThingTalk program
End-User Programmed Access Control

“Maggie can watch Netflix from 7-8 pm”

$c$: access control

$p$: Remote ThingTalk program

$c \land p$: conforming program

Owner imposes parental control, without requiring Netflix’s support

Access controls expressed as SMT (Satisfiability Modulo Theories)
Personal Data

• #deletefacebook
  • Can we create a natural language interface for people who get a copy of their Facebook/Google data?
  • Can we help them share with people according to their policies?
Personalized Everything

- E.g. Personal location data
  - Lots of personal location data on Google
  - Natural language interface for querying location-based data?
    - When did I go to Hawaii?
    - What are the restaurants I visited?
Replacing One-of apps with Distributed Queries in Natural Language

- Glimpse: friends share location on a ski trip or a caravan road trip
- Matching people in a conference: Finding matches of people based on individual LinkedIn or Facebook profiles.
- Weightloss, fitness, betting competitions: Automatically based on IoTs or public results
- Bill sharing, event invitations
Surprising Survey Results on Sharing

Increase in % people willing to share due to fine-grain control across 20 scenarios
Willingness to share increases 90% with access control