# Tag, You Can See It! Using Tags for Access Control in Photo Sharing

Peter E. Klemperer, Yuan Liang, Michelle L. Mazurek, Manya Sleeper, Blase Ur, Lujo Bauer, Lorrie Faith Cranor, Nitin Gupta, and Michael K. Reiter

Goals

- Users have **complex photo sharing preferences** that are difficult to capture
- We investigated the usability of creating **access-control rules with photo tags**, e.g., for your BOSS:
  - *If tagged with COMPANY PICNIC then ALLOW ACCESS*
  - *If tagged with DRUNK then DENY ACCESS*
- **Research questions**:
  - Can organizational tags be used as-is to create effective access-control rules?
  - Does tagging with access control in mind improve the performance of tag-based access control?
 - How do users engage with the concept of tag-based access control?
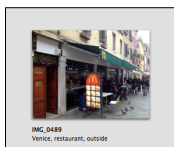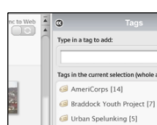
Methodology

- 18-participant **lab study**
- Iteratively tagged own photos in **three tagging tasks**:
  - Task 1: tagging for organization
  - Task 2: tagging for access control
  - Task 3: fine-tuning previous tags
- Asked participant for **sample set of sharing preferences**
- Created **machine-generated access-control rules** based on user-supplied sharing preferences and tags
- Showed participants rules for **feedback** after Tasks 1 and 2

Details: Generating and Evaluating Rules

- Used tags to create **machine-generated rules**, e.g., for Mary:
  - *If tagged with "carrie furnace" then DENY ACCESS*
- Used the **C4.5 decision tree algorithm** for rule generation
- Showed participants **rules interface** for feedback
- **Measured accuracy** of rules at capturing photo-sharing preferences
  - Evaluated % of photos correctly classified
  - Evaluated conflicts with weak vs strong preferences

Example: Rules for Mary
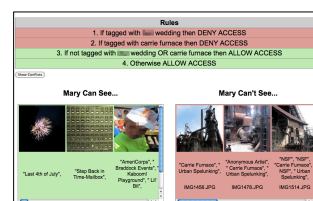
Results

- Rules created from organizational tags (Task 1) **captured preferences at a high rate** (~92% of photos correctly classified as allowed/denied access)
- **Improvement when participants actively tagged for access control** in Task 2 (to ~95%)
- Participants **understood and liked the idea** of tag-based access control

% photos incorrectly classified, by task and participant: