Automated Translation of Permission-Requiring Code to Privacy Statements

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Mobile Applications Violate Privacy!

- By recording audio without your permission (unauthorized).
- By sharing IP Address with 3rd parties for ads without properly informing users (unfair).
- By flashlight app collecting your location (illegitimate).
Creating privacy notices that match applications’ behavior requires a lot of effort!

- Legal experts create privacy policy:
  - Long
  - Technical Jargon
  - College Level Reading
  - Inconsistent
- Constant update required.
- No domain knowledge.
- Use privacy policy generator:
  - Vague
  - Generic
  - Inconsistent
Privacy Recommender System I

• An end-to-end framework that identifies code segments processing personal information and translate it to privacy statements.

Application code segment

Edit Blemishes Photos collects location to identify near by attractions.
Privacy Recommender System II

1. Identify Relevant Code Segments
2. Neural Machine Translation
3. Privacy Statements
Privacy Recommender System – Phases

• Phase One – Developing mappings of API to personal information.

• Phase Two – Analyzing and understanding how privacy policies are written and annotating privacy segments.

• Phase Three – Mapping code segments with privacy statements
  • Train Neural Translation Model

• Phase Four – Evaluation and User Studies
Contributions

• End-to-end privacy framework

• Novel approach to resolve inconsistency

• Translation dataset

• Software tools

• Language models
Main Contributors

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