**SecureRank - Trust of Mobile Apps using Subjective Opinion**

Nahida Sultana Chowdhury, Rajeev R. Raje
Department of Computer & Information Science, School of Science

### Motivation

- App distribution platforms typically rank/recommend Apps based on:
  - Average star ratings, the number of downloads, and associated reviews -- the external aspect of an App; ignore critical internal aspects (e.g., security vulnerabilities) of the Apps
- Traditional Feedback mechanisms are not suitable due to:
  - Self-selection bias: Poorly written reviews -- Flood app stores with positive reviews before even launching their apps
  - Developers urge users and friends to downgrade competing Apps
  - Changes to an App Store can kill the review scores

### Proposed Approach

- **Trust, is the ability of an app to deliver the promised behavior under various situations**

  - Evidences about an App can be divided into two categories:
    - Internal evidence: indicate the developers’ view (i.e., source or binary)
    - External evidence: indicates the users’ view (i.e., review, rating)

  - Security-related and Evidence-based Ranking Scheme that highlights the risks and compares Apps offering similar functionalities

### Results

- Target Distributed Platform - Google Play Store
- Total number of Apps = 35 (3 different categories)
- Total number of crawled reviews = 1, 12, 500
[dataset: https://github.com/nahida-uap/SERS-Apps-Experimental-Dataset]

<table>
<thead>
<tr>
<th>App Categories</th>
<th>Average rating &amp; E_DM (Distance %)</th>
<th>Average rating &amp; E_DIM (Distance %)</th>
<th>I_DM &amp; E_DIM (Distance %)</th>
<th>SERS &amp; Average rating (Distance %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication (messenger)</td>
<td>16%</td>
<td>42%</td>
<td>49%</td>
<td>19% – 38%</td>
</tr>
<tr>
<td>Entertainment (Online TV)</td>
<td>9%</td>
<td>49%</td>
<td>58%</td>
<td>15% – 41%</td>
</tr>
<tr>
<td>Photography (Photo Editor)</td>
<td>22%</td>
<td>27%</td>
<td>40%</td>
<td>22% – 36%</td>
</tr>
</tbody>
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### References