

Cracking Down Online Deception Ecosystems

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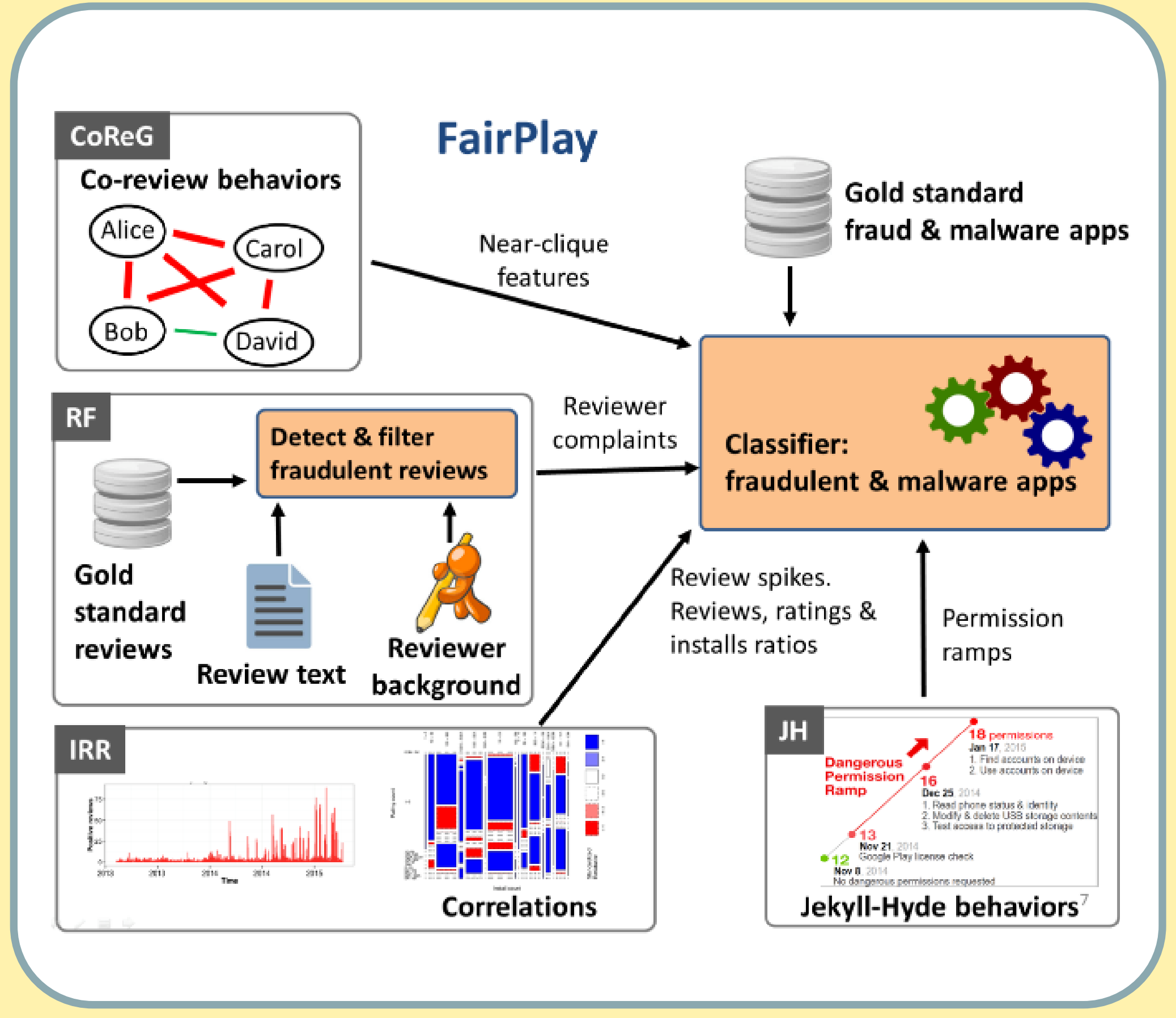
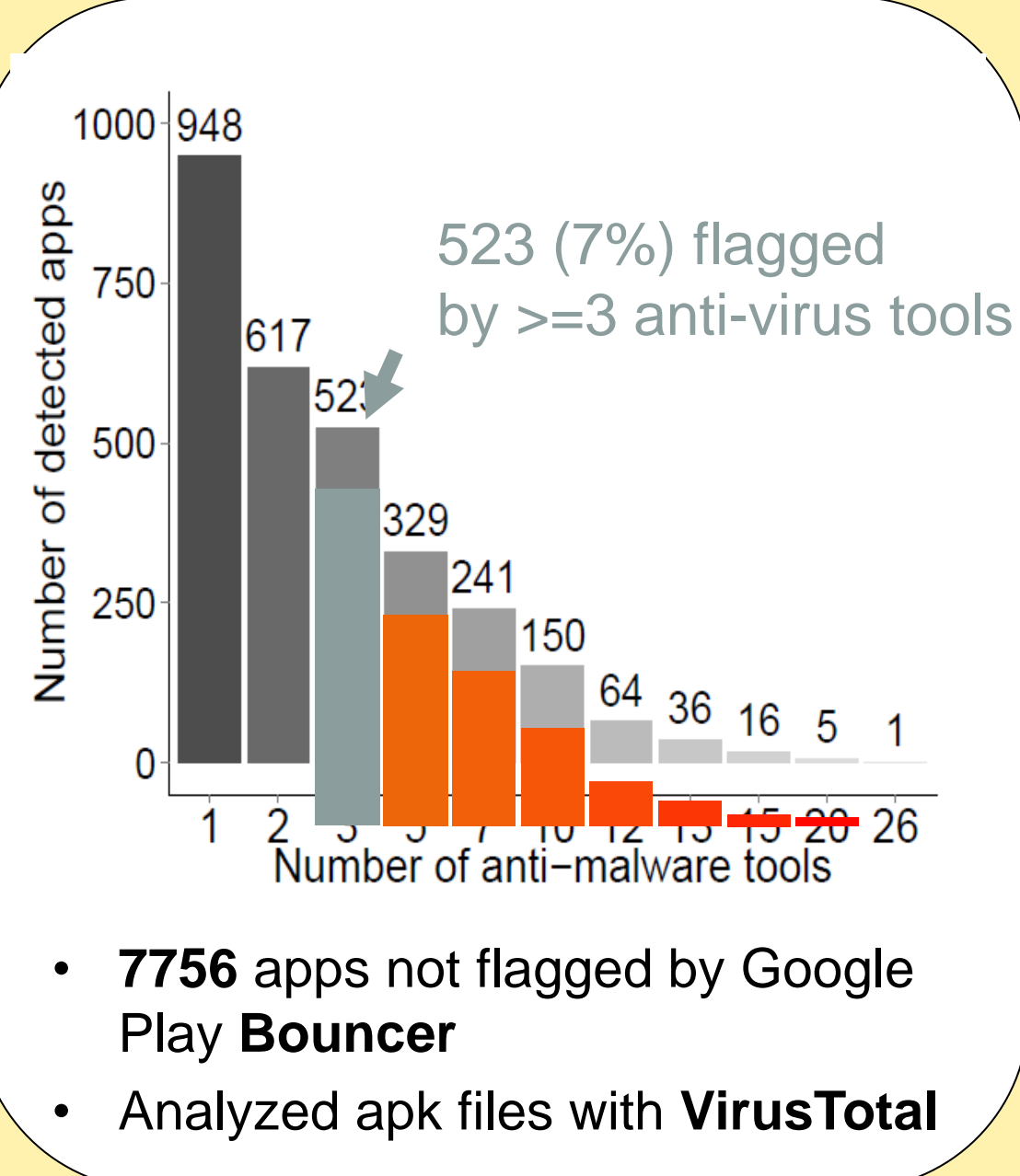
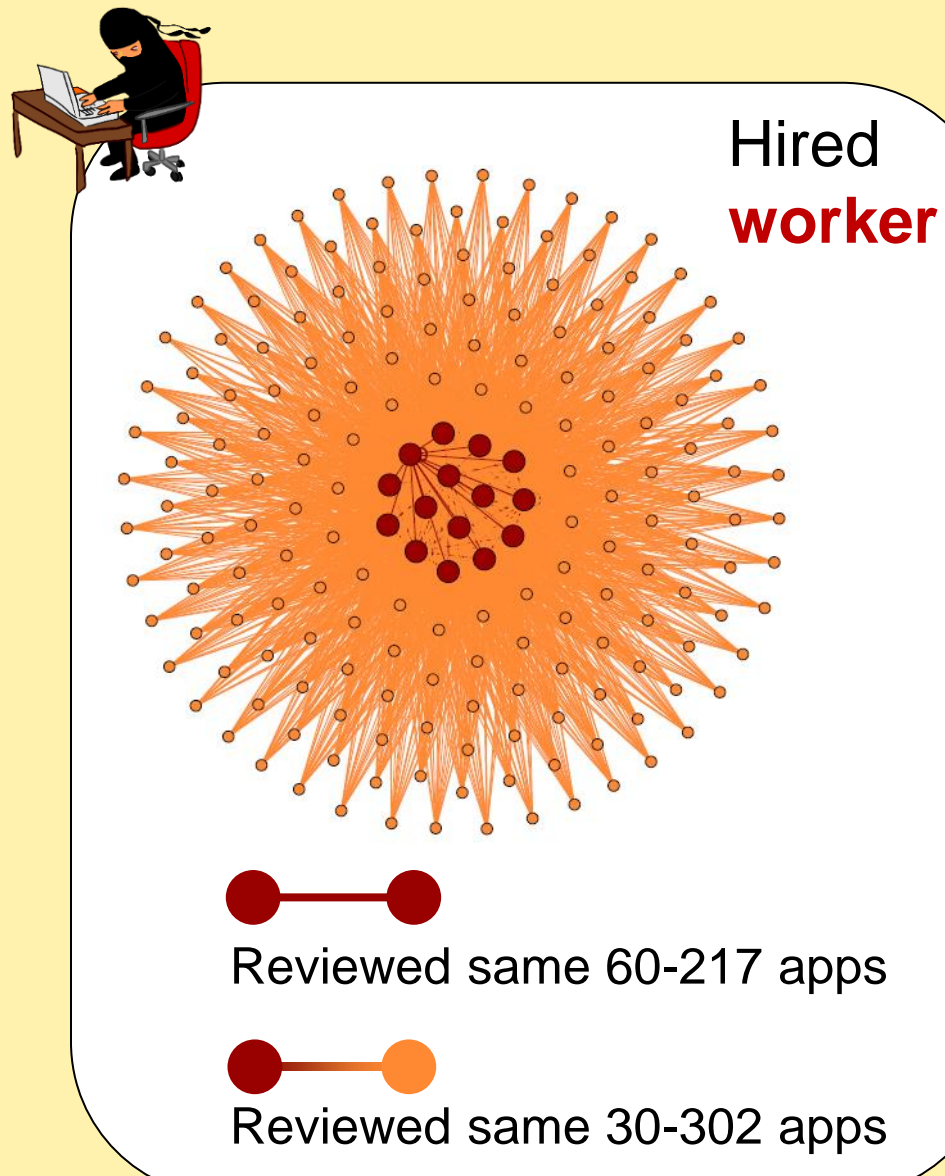
<https://users.cs.fiu.edu/~carbunar/caspr.lab/socialfraud.html>



Objective: identify fraud at the intersection of online systems and crowdsourcing sites

Challenges:

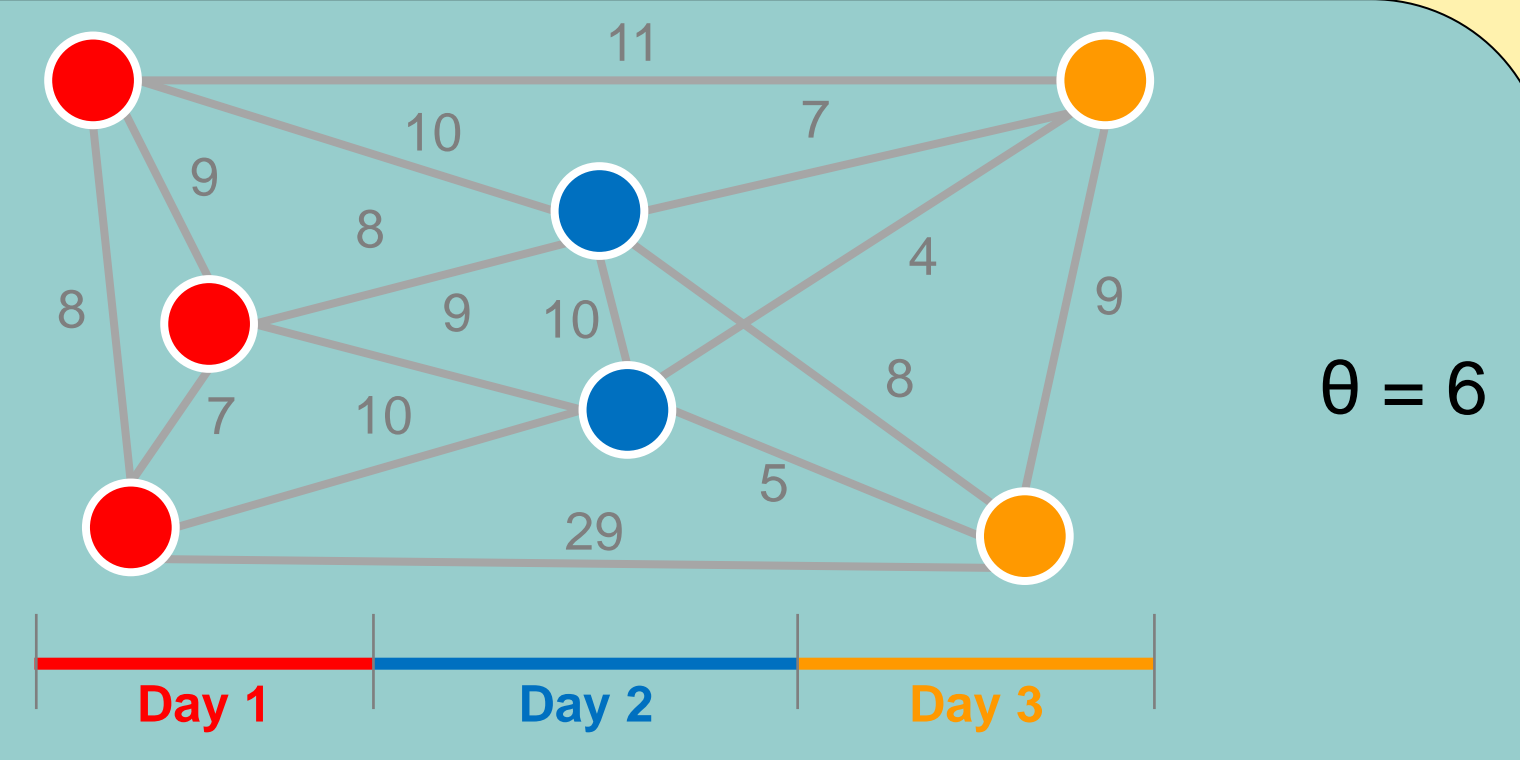
- Existing techniques unable to curb **organized** online fraud
- Fraud originates from **resourceful** human workers
- Insufficient fraud behavior data
- Highly dynamic online services



Pseudo Clique Finder (PCF) Algorithm

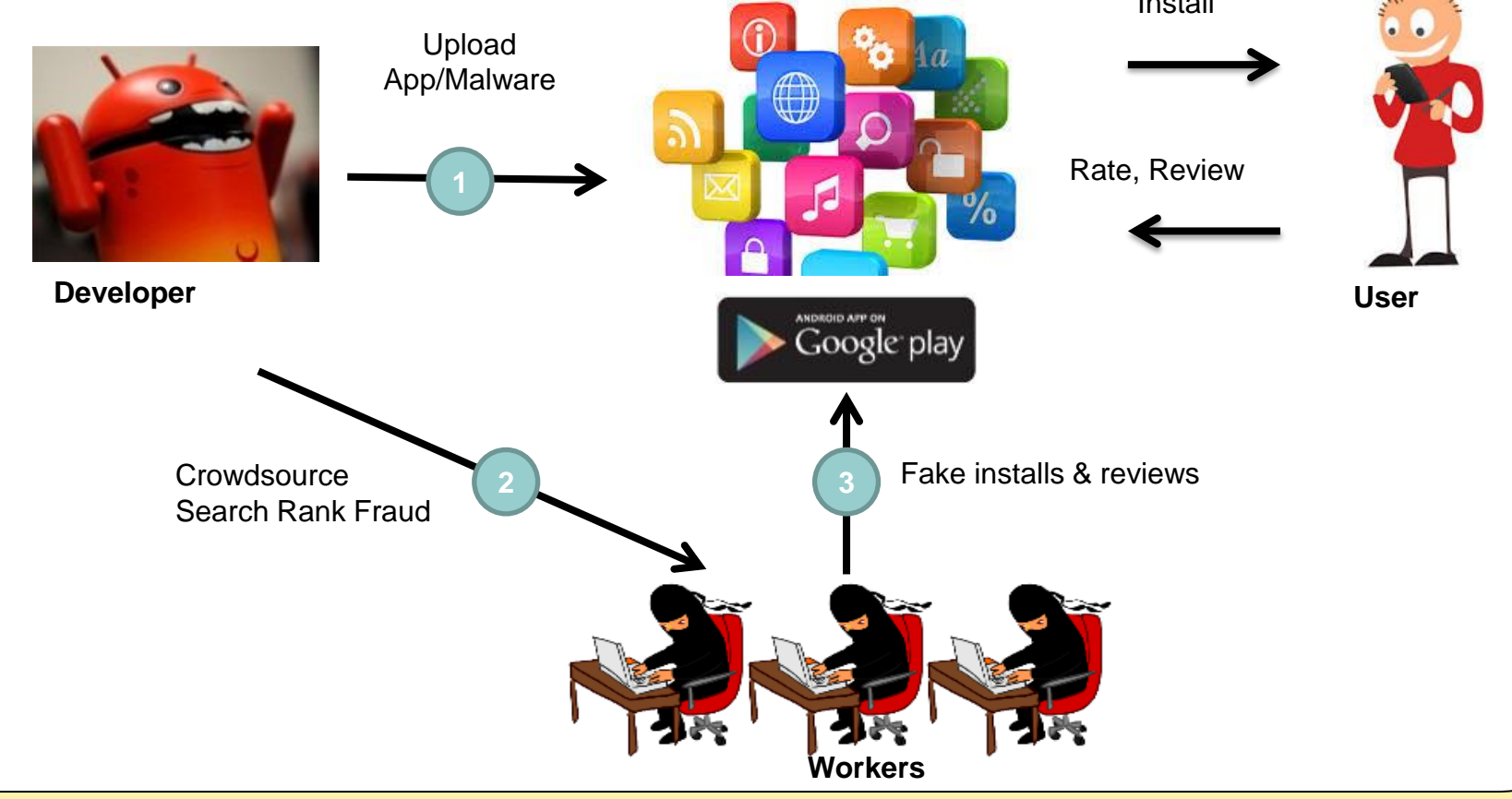
Approach

- Collect and publish **gold standard** attributed fraud
- Reveal unique fraud innovations and behaviors of fraudsters
- Combine linguistic and graph methods to group fraud creators
- Design **FairPlay** system to differentiate fraudsters from honest users
- Design light-weight visualizations that help the user avoid fraudulent products



- Identify reviewers who
- Have past review history
 - Posted reviews within days of each other

System & Adversary Model

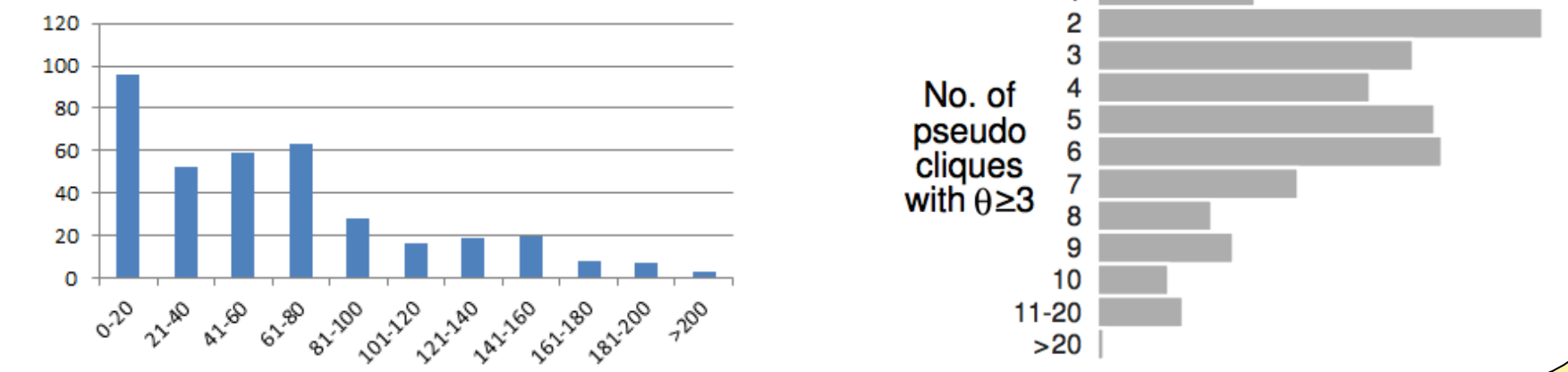


- Features based on review R written by user U for app A**
 - U's expertise for A (#reviews U wrote for apps similar to A)
 - U's bias towards A (#reviews U wrote for developer of A)
 - \$ that U spent on apps
 - R's rating and its percentile among U's reviews
- Features based on review text**
 - % of positive and negative sentiment statements
 - Used NLTK and Naive Bayes classifier

Trained FairPlay on 201 fraudulent and 200 benign apps; tested on 212 malware apps
75% of malware apps are flagged as fraudulent

Malware developers engage in search rank fraud to increase the impact of their malware

- Selected 1,600 apps (from 87K apps monitored):
- Arcade, Entertainment, Photography, Simulation, Racing, Sports, Lifestyle, Casual (200 from each)
 - 50,643 reviewers (e.g., the ids of all the 166,407 apps they reviewed).
- Trained FairPlay on benign and fraudulent apps
- 372 (23%) of 1,600 labeled fraudulent
 - 75% have 20+ indicator words
 - 93% participated in 1+ pseudo clique of size 3



Interested in meeting the PIs? Attach post-it note below!