Contents

[6.4] Social Loafing in Security Tasks

1. Operational Definition: The tendency for individuals to exert less effort when working collectively on a shared security task than when working alone. This is measured by a disparity in contribution levels among team members on collaborative tasks, leading to delays and reduced quality.

2. Main Metric & Algorithm:

- **Metric:** Contribution Disparity Index (CDI). Formula: `Standard Deviation(Contributions) / Mean(Contributions)`. A higher CDI indicates a wider gap between high and low contributors.
- **Pseudocode:**

  python

  ```
  def calculate_cdi(team_tasks):
      """
      team_tasks: A list of tasks where 'assignees' is a list of users and 'contributions' i
      """
      all_contributions = []
      for task in team_tasks:
          for contributor, percentage in task.contributions.items():
              all_contributions.append(percentage)

      mean_contribution = np.mean(all_contributions)
      std_contribution = np.std(all_contribution)
      cdi = std_contribution / mean_contribution if mean_contribution > 0 else 0
      return cdi
  ```

- **Alert Threshold:** `CDI > 0.7` (A coefficient of variation > 0.7 suggests high disparity).

3. Digital Data Sources (Algorithm Input):

- **Version Control (GitLab/GitHub API):** For collaborative tasks like writing detection rules (e.g., Sigma, YARA). Data: `commit_author`, `lines_added`, `lines_removed`, `merge_request_id`.
- **SOAR Platform:** For collaborative incident response. Data: `incident_id`, `action_taken`, `analyst`, `timestamp`.
- **Wiki/Documentation Platforms:** `page_edits`, `editor`, `edit_size`.

4. Human-to-Human Audit Protocol: Review the contribution metrics (e.g., Git commits for a specific project) with the team in a blameless retrospective. Ask: "Does this distribution feel accurate? Were there challenges in collaboration that prevented more even contribution? How can we better distribute the workload?"

5. Recommended Mitigation Actions:

- **Technical/Digital Mitigation:** Use project management tools that provide visible, transparent dashboards of individual contributions to shared tasks (e.g., Kanban boards with assignee filters).
- **Human/Organizational Mitigation:** Establish clear, smaller, individual sub-tasks within larger collaborative projects during sprint planning. Recognize and reward collaborative effort.
- **Process Mitigation:** Implement peer review processes (e.g., for detection rules) that require at least two reviewers, formally distributing the workload and quality assurance responsibility.