Identifying Code Smells with Multiple Concern Views

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Code Smells and Concerns
- Code smells are often caused by crosscutting concerns
- Software visualization are mostly limited to present modular structures
  - Packages, classes, methods and relationships

SourceMiner
- SourceMiner is a visualization tool
  - It implements a multiple views approach enriched with concern properties
- Includes four views
  - concern’s package-class-method structure
  - concern’s inheritance-wise structure
  - concern dependency
  - concern dependency weight

Package-Class-Method

Inheritance-wise Structure

Concern Dependency
Evaluation Protocol

- Controlled experiment with 5 participants
- Each participant had to detect instances of three code smells
  - God Class, Divergent Change, and Feature Envy
- They used SourceMiner to visualize the structure and concerns of one application (MobileMedia)

Results

- SourceMiner supported detection of two code smells
  - God Class and Divergent Change
- It did not help detecting Feature Envy

<table>
<thead>
<tr>
<th></th>
<th>Recall</th>
<th>Precision</th>
</tr>
</thead>
<tbody>
<tr>
<td>God Class</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Divergent Change</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Feature Envy</td>
<td>0.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Bibliography