|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Extraction Form** | | | | | | | | | | | | | | | | | | | | | | | |
| **Title** | Towards a Classification of Bugs to Facilitate Software Maintainability Tasks | | | | | | | | | | **Authors(s)** | | Mathieu Nayrolles and Abdelwahab Hamou-Lhadj | | | | | | | | | | |
| **Year** | 2018 | | | | | | | | | | **Venue** | | * **Journal** | | * Conference | | | | | * Other \_\_\_\_\_\_\_\_\_\_ | | | |
| **Quality Assessment criteria** | | | | * **QC1** | | | | * **QC2** | | | | | * QC3 | | * QC4 | | | | | * **QC5(Partial)** | | | * **QC6** |
| **Inclusion Criteria** | | | | * IC1 | | | | * **IC2** | | | | | * **IC3** | | | * **IC4** | | | | * **IC5** | | | |
| **Exclusion Criteria** | | | | * **EC1** | | | * **EC2** | | * **EC3** | | | | * **EC4** | * **EC5** | | | | | * **EC6** | | * **EC7** | | |
| **Approach Used**   * Supervised Machine Learning algorithms * Unsupervised Machine Learning algorithms * Natural language processing * Deep Learning algorithms * Data mining based techniques (relevant   characteristics of BRs and their fixes such as opening time, number of comments, number of times the BR is reopened, number of change sets for BR and the number of files changed and lines modified for fixes or patch)   * **Statistical Method (Pearson’s chi-squared test)** | | | | | | | | | | **Type of Solution** | | | | | | | | **Yes** | | **No** | | **Unclear** | |
| Novel Technique (Method, Tool, Technique) | | | | | | | | Check mark, Wingdings font, character code 252 decimal. | |  | |  | |
| Evaluation of existing techniques  (Evaluation framework, tool, platform) | | | | | | | |  | | Check mark, Wingdings font, character code 252 decimal. | |  | |
| Supporting techniques | | | | | | | |  | |  | | Check mark, Wingdings font, character code 252 decimal. | |
| **Review dataset** | | **Total number of apps** | | | | 2(NetBeans and Apache Software Foundation project) | | | | **Evaluation metrics Used** | | | | | | | | p-value | | | | | |
| **Total number of crawled reviews** | | | | N/A | | | |
| **Year** | | | | 2016 | | | |
| **Research Type Facet**   * Validation Research * **Evaluation Research** * **Solution Proposal** * Philosophical Papers * Opinion Papers * Experience Papers | | | | | **Solution Type**   * **Single** * Hybrid/Integrated | | | | | | | **Contribution**   * Technique * Tool * Comparison * Model * Framework * Prototype * **Taxonomy** | | | | | **Evaluation Strategy**   * **Case Study** | | | | | | |
| **Features used**   * **Categorical** * Textual * Both. | | | | | | |
| **Factors Considered** | | | Bug types, Simplifying bug reports, Classification of bugs into four categories | | | | | | | | | | | | | | | | | | | | | |
| **Notes** | | |  | | | | | | | | | | | | | | | | | | | | | |
| **Limitations** | | | * Not worked on bug categorization * Focused on simplifying bug reports | | | | | | | | | | | | | | | | | | | | | |
| **Description / Summary** | | | After examining more than 100 thousand bug reports of 380 projects, they found that bugs can be classified into four types based on the location of their fixes. Type 1 bugs are the ones that fixed by modifying a single location in the code, while Type 2 refers to bugs that are fixed in more than one location. Type 3 refers to multiple bugs that are fixed in the exact same location. Type 4 is an extension of Type 3, where multiple bugs are resolved by modifying the same set of locations. | | | | | | | | | | | | | | | | | | | | | |