|  |  |  |  |
| --- | --- | --- | --- |
| Title | A comprehensive survey on the process, methods, evaluation, and challenges of feature selection | | |
| Author(s) Name | Md Rashedul Islam, Aklima Akter Lima, Sujoy Chandra Das, MF Mridha, Akibur Rahman Prodeep, Yutaka Watanobe | | |
| Contact Email(s) | firoz.mridha@aiub.edu | | |
| Published Journal Name | IEEE Access | | |
| Type of Publication | Survey | | |
| Volume | 10 | Issue |  |
| Publisher | IEEE | | |
| Publication Date | 2022/9/12 | | |
| ISSN | 2169-3536 | | |
| DOI | 10.1109/ACCESS.2022.3205618 | | |
| URL | https://ieeexplore.ieee.org/abstract/document/9885186 | | |
| Other Related Info. |  | | |
|  | | | |

|  |  |
| --- | --- |
| Abstract |  |
| Feature selection is employed to reduce the feature dimensions and computational complexity by eliminating irrelevant and redundant features. A vast amount of increasing data and its processing generates many feature sets, which are reduced by the feature selection process to improve the performance in all types of classification, regression, clustering models. This study performs a detailed analysis of motivation and concentrates on the fundamental architecture of feature selection. This study aims to establish a structured formation related to popular methods such as filters, wrappers and, embedded into search strategies, evaluation criteria, and learning methods. Different methods organize a comparison of the benefits and drawbacks followed by multiple classification algorithms and standard validation measures. The diversity of applications in multiple domains such as data retrieval, prediction analysis, and medical, intrusion, and industrial applications is efficiently highlighted. This study focuses on some additional feature selection methods for handling big data. Nonetheless, new challenges have surfaced in the analysis of such data, which were also addressed in this study. Reflecting on commonly encountered challenges and clarifying how to obtain the absolute feature selection method are the significant components of this study. | |