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Machine Learning Techniques to Predict Cyberbullying and Improve Social Work Interventions

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Abstract : Machine learning offers a set of techniques to promote social work interventions and can lead to support decisions of practitioners in order to predict new behaviors based on data produced by the organizations, services agencies, users, clients or individuals. Machine learning techniques include a set of generalizable algorithms that are data-driven, which means that rules and solutions are derived by examining data, based on the patterns that are present within any data set. In other words, the goal of machine learning is teaching computers through 'examples', by training data to test specifics hypothesis and predict what would be a certain outcome, based on a current scenario and improve that experience. Machine learning can be classified into two general categories depending on the nature of the problem that this technique needs to tackle. First, supervised learning involves a dataset that is already known in terms of their output. Supervising learning problems are categorized, into regression problems, which involve a prediction from quantitative variables, using a continuous function; and classification problems, which seek predict results from discrete qualitative variables. For social work research, machine learning generates predictions as a key element to improving social interventions on complex social issues by providing better inference from data and establishing more precise estimated effects, for example in services that seek to improve their outcomes. This paper exposes the results of a classification algorithm to predict cyberbullying among adolescents. Data were retrieved from the National Polyvictimization Survey conducted by the government of Chile in 2017. A logistic regression model was created to predict if an adolescent would experience cyberbullying based on the interaction and behavior of gender, age, grade, type of school, and self-esteem sentiments. The model can predict with an accuracy of 59.8% if an adolescent will suffer cyberbullying. These results can help to promote programs to avoid cyberbullying at schools and improve evidence based practice.

Keywords : cyberbullying, evidence based practice, machine learning, social work research
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