**Cyberbullying Detection and Classification Using Information Retrieval Algorithm**

The authors Nandhini and Sheeba have talked in [1] about how social networking is increasing in recent years accompanied with cyberbully. They said that detection of online harassment and provision of social media are the way to stand against cyberbullying. They used Levenshtein algorithm and Naive Bayes Classifier to detect cyberbully cases. They reaced 91% accuracy on MySpace.com dataset with 500 posts. They finished saying that their system can help authorities to force laws on internet and fight cyberbullying.

**Abusive Language Detection in Online User Content**

The authors Nobata, et al have showed us in [2] that using abusive language has increased recently and can’t be detected with the current approaches available. They used a framework called Vowpal Wabbit for classification. They developed a supervised classification methodology with NLP features that outperform a deep learning approaches. Finally, the F-score has reached 0.817 using dataset collected from comments posted on yahoo! News and Finance.

# **Machine learning and semantic analysis of in-game chat for cyber bullying**

The authors Buchanan, et al discussed in [3] the serious nature of cyberbullying and how to detect it. They used War Of Tanks game chat messages to help in the detection of cyberbullying. They manually classified 5,000 messages into multiple categories for each message to determine it’s level. Then they compared it with the simple naive automatic classification that uses sentiment analysis as features. Finally, the results were poor when compared with the manually classified results.

**Online Social Network Bullying Detection Using Intelligence Techniques**

The authors Nandhini and Sheeba have discussed in [4] the importance of having systems that detects cyberbullying due to the increase of social networking activities. They purposed a system that help governments to detect cyberbullying and take actions to prevent it. Their system uses genetic operations(FuzGen) like crossover and mutation for optimizing the parameters before sending it to the Naive Bayes classifier. Finally, they reached 0.87 accuracy.

**Cyberbullying Detection A Step Toward a Safer Internet Yard**

The authors Dadvar and de Jong have talked in [5] about how serious cyberbullying is, they hypothesized that the use of user’s information is essential for more precise detection like: age and gender. They used SVM model in WEKA(data mining software) for classification and they used Mypes service that allows the aggregation of users’ profiles so they can link users on multi social media platforms. They calculated the ratio of profane words and the ratio of pronouns in each post then used as features along with TFIDF. Finally, they reached 0.44 precision.