

## **A New Dataset for Evaluating Customer Satisfaction with Virtual Reality Headsets through Sentiment Analysis**

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### **Abstract**

Virtual Reality (VR) is increasingly becoming a part of our daily lives, offering diverse applications from gaming and entertainment to education and training. VR utilizes pose tracking and 3D near-eye displays to create a simulated experience, immersing users in a virtual world. VR headsets use pose tracking and 3D near-eye displays to immerse users in virtual reality. They let users interact and explore virtual worlds by tracking their movements and displaying realistic 3D visuals close to their eyes and enable VR's simulated environments. The assessment of customers' satisfaction with VR headsets is important. Although there are several research in the context of VR and customers' preferences, this issue is fairly unexplored for customers' satisfaction with VR headsets using machine learning. The previous studies have mainly relied on user-based surveys with old-style approaches. Indeed, to explore the customers' satisfaction with these products, real-world datasets are necessary, yet the absence of such datasets poses a challenge. In this work, a new dataset is presented for the evaluation of customers' satisfaction with virtual reality headsets. The dataset is collected from the Amazon.com website. It includes 1123 online customers' reviews on virtual reality headsets. Sentiment analysis is performed on online customers' reviews to understand customers' opinions regarding VR headsets. Sentiment analysis becomes an essential part of every social network, as it enables decision-makers to know more about users' opinions. Two predictive models, decision tree and XGBoost (extreme gradient boosting) predictor, are used to predict the sentiment class of the documents. The generated dataset can be utilized to gain a deeper understanding of customers' needs, preferences, and sentiments. This will enable the developers of VR headsets to produce more sophisticated products to meet customer expectations effectively.

Keywords: Virtual Reality, Decision Tree, XGBoost Predictor, Sentiment Analysis

### **1. Introduction**

Virtual Reality (VR) technologies can offer a wide range of applications in our daily lives [1-7]. Virtual reality has the potential to transform user interactions with information and environments [8-10]. Users across many domains can have a transformative and immersive experience thanks to the use of VR technologies [11-13]. VR headsets play a pivotal role in this immersive experience [14], allowing users to interact and explore virtual environments by accurately tracking their movements and presenting lifelike 3D visuals near their eyes [15, 16].

Assessing customers' satisfaction with VR headsets is of paramount importance. Although research on VR and customer preferences exists [17, 18], the area of customer satisfaction with VR headsets using machine learning techniques remains relatively unexplored. Previous studies primarily relied on user-based surveys and traditional approaches [18, 19]. Survey-based data may not be comprehensive enough to accurately assess the customers' satisfaction with VR technologies. In addition, the analysis of big datasets collected from online customers' reviews may better reveal the shortcoming of these technologies from the users' perspectives [20-41]. To address this gap, we present a novel dataset for evaluating customers' satisfaction with virtual reality headsets. The dataset includes online customers' reviews which is effective in the assessment of users' concerns reading newly developed technologies [24, 42, 43] and improve the shortcomings of survey-based approaches. By analyzing this real-world dataset, deeper insights into customers' sentiments and preferences toward VR headsets and be gained which enhance our understanding of their satisfaction levels. In addition, the availability of such a dataset will enable businesses and researchers to make data-driven decisions, develop more tailored VR offerings, and ultimately enhance the overall customer experience in the realm of virtual reality technology.