An Optimal Path for Virtual Reality Education using Association Rules

Authors : Adam Patterson

Abstract : This study analyzes the self-reported experiences of virtual reality users to develop insight into an optimal learning path for education within virtual reality. This research uses a sample of 1000 observations to statistically define factors influencing (i) immersion level and (ii) motion sickness rating for virtual reality experience respondents of college age. This paper recommends an efficient duration for each virtual reality session, to minimize sickness and maximize engagement, utilizing modern machine learning methods such as association rules. The goal of this research, in augmentation with previous literature, is to inform logistical decisions relating to implementation of pilot instruction for virtual reality at the collegiate level. Future research will include a Randomized Control Trial (RCT) to quantify the effect of virtual reality education on student learning outcomes and engagement measures. Current research aims to maximize the treatment effect within the RCT by optimizing the learning benefits of virtual reality. Results suggest significant gender heterogeneity amongst likelihood of reporting motion sickness. Females are 1.7 times more likely, than males, to report high levels of motion sickness resulting from a virtual reality experience. Regarding duration, respondents were 1.29 times more likely to select the lowest level of motion sickness after an engagement lasting between 24.3 and 42 minutes. Conversely, respondents between 42 to 60 minutes were 1.2 times more likely to select the higher levels of motion sickness.