Thesis Project Portfolio

ECE Capstone Project Final Report: SlapBot

(Technical Report)

The Design of Addiction: How Online Sports Gambling Platforms Shape Addictive Behavior

(STS Research Paper)

An Undergraduate Thesis

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Executive Summary

My research explores how technology doesn't just respond to human behavior, but actively reshapes it. Across both of my research projects, I investigate how technology mediates human behavior, whether through the physical gameplay of SlapBot, or the behavioral conditioning embedded within online sports gambling platforms. My Capstone project, SlapBot, is an interactive robot designed to play the card game Slapjack, breaking down barriers for those who may feel anxious or hesitant to participate. This project not only recreates the fun and fast-paced nature of Slapjack but also serves as an inclusive tool for people of all ages, from children to the elderly. My STS research paper explores how online sports gambling platforms affect gambling behavior and the potential for addiction. Both topics address how technology can intervene in human behavior, for better or for worse.

The purpose of my Capstone project is to break down barriers for those who may feel anxious or hesitant due to social anxiety to participate in a fast-paced game like Slapjack. This project can also offer benefits to children and the elderly who are looking to train and develop their reflexes and reaction time, or to individuals who just want to practice to improve their skill at the game. By creating an environment that encourages growth and skill-building, we're extending the appeal of Slapjack to anyone eager to play, learn, and improve at their own pace, before transitioning into playing in a group setting.

Through testing and modification, SlapBot successfully demonstrated its ability to detect face cards and respond with a slap using a servo-controlled robotic arm. Per our own rubric and criteria, our project was considered successful as the robotic arm we built correctly executed the correct responses and our image recognition algorithm carried a success rate of at least 75 percent. While the card recognition algorithm did struggle with certain test cases such as overlapping cards, a makeshift card-holder was put in place to help the camera see one card at a

time. In the future, Slapbot could be expanded to play other card games like Egyptian Rat Slide (ERS). Additionally, a buzzer-based interrupt implementation could make the system multiplayer, allowing human players to compete against SlapBot.

To understand the influence of technology on sports gambling behavior, this research investigates how online sports gambling platforms affect user behavior and contribute to the potential for addiction. With the rise of online sports gambling, through recent legalization and heavy advertisement, it is important to understand how technology is being used to reshape gambling habits. To analyze this issue, I use the analytical framework of SCOT (social construction of technology) to investigate how sports betting companies behave with the technologies they employ to keep consumers. Additionally, a literature review of existing research provides insight into how scholars have addressed the psychological, social, and technological aspects of online sports betting and case studies offer insight into how users engage with gambling platforms and develop compulsive behaviors.

The evidence drawn from the literature and case studies suggest that these platforms use design features such as in-play betting that encourages problematic betting behavior. The immediacy of making and adjusting bets produced an illusion of control, and therefore they found themselves gambling more frequently. However, the randomness of real-time sporting events mean that even well-informed decisions offer no guarantee of betting success. Case studies and user testimonies highlighted a pattern of impulsive betting and loss chasing, revealing how platform features can intensify compulsive behavior over time. These findings emphasize the need for a middle ground that preserves the entertainment value of online sports gambling, while implementing design practices that protect users from addictive behaviors.