Thesis Project Portfolio

Project Romulus

(Technical Report)

Turning Up the Temperature: How Twitter Data Reveals Public Perception of Culinary Robots

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Jacob Cochran

Spring, 2025

Department of Electrical and Computer Engineering

Table of Contents

Sociotechnical Synthesis

Airsoft is a cooperative, high-intensity sport shown to have numerous social and physical benefits. But those with motor coordination limitations can struggle to participate in this enriching sport. Our capstone team built an aim-assisting robotic grip designed to improve players' aim. This project helps break down barriers in sport by allowing all kinds of players to experience Airsoft. We designed it with open software and hardware platforms so anyone can adapt our research to increase sports access more generally.

Robotics has seen a resurgence of new interest caused by labor shortages, open innovation initiatives, and new developments in artificial intelligence-driven controls. With robotics and automation expanding, their wider social consequence must be considered. Automation has often been used to lower costs by replacing workers. As labor costs continue to rise in the food service industry and the availability of a cheap labor supply dwindles, many businesses have turned towards automation, like food delivery, service, and cooking robots. The success of restaurants, though, depends on both the experience and the food. But human experience has long been an important part of the dining experience, from interactions with staff to the cultural and artistic expression of food. The success of food automation will hinge on what society can accept.

To research how food robotics will codevelop with the societies that create them, this research draws upon a Social Constructivist view of technology to study over a decade of Twitter reactions to food automation. By identifying stakeholders, issues, and sentiment within the discourse, this research addresses how food automation has developed and the problems it is likely to encounter. The results identify key areas for food automation, such as crime, safety, and a counter-cultural resistance to the dehumanization of food.

Combined, this technical and social research touches on the ways we wield robotics and automation. SCOT tells us that robotics itself is a meaningless concept. Rather, it's the social and technical interplay that creates meaning and value. The ultimate form of robotics and automation depends

on what we are willing to accept and how we create a society that prioritizes the form of automation we want to see. Whether we choose to create robots to break physical barriers or to replace fast food workers has yet to be revealed.