

2020 Vision: Wearable Haptic Ultrasonic Object Detector  
(Technical Report)

The Competition for the Future of Employment in the Age of Artificial  
Intelligence  
(STS Research Paper)

An Undergraduate Thesis Portfolio  
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by

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## Preface

Do the risks of increased automation outweigh the costs? Automation can increase productivity and relieve burdens from humans, but it can also displace jobs and induce complacency.

How can automation serve visually impaired people? Some assistive devices are expensive and inconvenient for users. 2020 Vision is a wearable device that increases situational awareness in the user's blind spots. The device uses a MSP430G2553 microcontroller which communicates with an ultrasonic sensor. It detects and predicts incoming collisions algorithmically and notifies the user using haptic feedback. The device can inform users of incoming objects in typical scenarios within a second of impact and is comfortable. Each unit costs about \$100 to assemble.

How are companies, workers, and governments competing to influence how artificial intelligence (AI) shapes the future of employment? Companies generally welcome AI as a means of increasing productivity and reducing labor costs. Workers, mostly through labor unions and professional societies, want to ensure that AI develops equitably, without causing mass unemployment. Government agencies and elected officials are divided; many see AI as a benefit to their economies, some consider corresponding efforts to relieve unemployment necessary.

## **List of Contents**

1. Preface
2. Technical Report: 2020 Vision: Wearable Haptic Ultrasonic Object Detector
3. STS Research Paper: The Competition for the Future of Employment in the Age of Artificial Intelligence
4. Prospectus