SANDY LOWENSCHUSS - YUMIN JANG - MAISIE WEYHING

BUSINESS SERVICES OPERATIONS

RESEARCH EVENT

actuateUMICH

- THE FUTURE OF CAMPUS SAFETY -

APRIL 27, 2025

TABLE OF
CONTENTS

OVERVIEW

The **University of Michigan** (U–M) is a **top public research institution** known for academic excellence, innovation, and public service. Located in **Ann Arbor, a city of over 120,000 people**, U–M has more than **50,000 students** across an array of programs. It ranks as one of the best public research institutions in the nation, consistently pioneering advancements in engineering, medicine, business, and law. As a hub for technological advancement and social progress, U–M plays a crucial role in the development of solutions for pressing societal issues.

Actuate AI is a **leading artificial intelligence and video analytics company** specializing in real–time, AI–driven surveillance for **security and safety.** By transforming existing security cameras into smart, threat–detecting systems, Actuate enhances security without requiring expensive new infrastructure. Its technology is already deployed across more than **1,000 schools and businesses**, as well as in the **U.S. military**, solidifying its reputation as a trusted provider of AI–powered security solutions.

Despite being known for its livability and safety, Ann Arbor, Michigan has seen an increase in crime over recent years. The city's current crime rate is currently at its all–time high, **with more crime than 68.6% of other U.S. cities.** Across the United States, crime rates are rising; the need for improved safety and security is clear. **What better place to begin this safety revolution than U–M, one of the largest public universities in the nation?**

OBJECTIVE

The objective of the **Actuate**UMICH project is to enhance campus safety at the University of Michigan using an AI–powered app. This app is designed to combine surveillance analysis with emergency alert capabilities, and will provide real–time, location–specific safety alerts and other helpful tools, in order to prevent and respond to threats with improved effectiveness.

"WHY?"

- The United States has experienced an alarming rise in mass shootings in the past few years.
- AI has proven potential to revolutionize the security industry.
- The protection of higher education institutions is highly valued by society and essential for societal progress.
- Institutions face significant financial costs and losses annually related to avoidable on–campus incidents.

THE APP

"ActuateUMICH"** is the proposed AI–powered security app that will be developed through a partnership between **University of Michigan** and **Actuate AI**. Designed to enhance campus safety, Actuate's AI engine will seamlessly integrate into U–M's existing surveillance network, providing advanced, real–time campus safety updates. To support its generative AI and chatbot features, the app will utilize U–M's secure, in–house AI tools, ensuring both privacy and reliability while addressing user safety concerns.

FEATURES

- Instant notifications for security incidents and threats.
- Actuate's gun/weapon detection.
- Actuate's smoke/fire detection.
- Actuate's crowd detection (navigating high–traffic areas).
- U–M's generative AI engine (provide notifications, ensure customizable alerts, answer user questions, etc.).

STATISTICS

Actuate AI Security Services have **PROVEN** to…

- Reduce false surveillance diagnostics by **95%+.**
- Possess **over 99% detection accuracy** of firearms within the first <u>five seconds</u> of visibility.
- Reduce human surveillance bias by up to **80%.**

IMPACT

ActuateUMICH aims to redefine campus security by minimizing confusion, improving situational awareness, and offering clear, strategic action steps.

KEY PERFORMANCE INDICATORS:

- Achieve **90%** of the U–M student body installing the app on their mobile device within the first year.
- Improve average campus security response rates by at least **40%** after six years.
- Lower campus crime rates (e.g., theft, assaults) by **15%+** within the first year.
- Decrease security and safety related expenditures in first fiscal year by **3%+** ($900k+).
- Have **ZERO** instances of data leaks, extended cybersecurity issues, or other privacy infractions across six years.

RESEARCH STUDY

METHODS

SURVEYS:
Stratified Random Sampling Method
- **500 U–M Student** "General Safety" Consensus Survey
- **30 U–M Faculty** "General Safety" Consensus Survey
- **15 U–M Security Personnel** "Room for Improvement" Survey

INTERVIEWS & TESTIMONIALS:
- **4 U–M Student** Interviews (20min each)
- **3 U–M Security** Personnel Interviews (30min each)
- **20 U–M Student** Testimonials
- **10 U–M Faculty** Testimonials
- **5 U–M Security** Personnel Testimonials

IN-PERSON CONFERENCES:
- 1 Meeting with **U–M Executive Director of Security (Eddie L. Washington)** and team members (30min)
- 1 Meeting with **U–M Police Chief (Crystal James)** (30min)

SECONDARY DATA ANALYSIS:
- Secondary Sources
  - U–M Division of Public Safety and Security Website
  - News outlets: CNN, NY Post, etc.
  - Shooting data: March for Our Lives
  - AI Insights: Stanford AI, Volt.ai, Arcules, etc.
- Bibliography for full sources breakdown

FINDINGS

- Only **38.4%** of U–M undergraduate students reported that they felt safe and secure while alone on campus at night.
- **64.8%** of students believe that U–M's campus security measures need to be improved.
- **77.8%** of students reported being unsure about how they would respond in the event of an active shooter situation on campus.

- Incidents of campus safety, such as the MSU shooting, heighten overall concerns and contribute to a **growing fear of similar events occurring on the U–M campus.**
- The integration of the University of Michigan into the city of Ann Arbor means that students generally experience higher crime rates than they would on campuses located outside of a city.

- U–M's Division of Public Safety and Security (DPSS) strives to become a "**global leader in safety and security services**".
- U–M's Department of Public Safety and Security (DPSS) focuses on five strategic priorities when developing safety plans.
- U–M's DPSS is eager to discuss the implementation of new technology, including AI solutions, in order to potentially improve the safety of U–M.

- There have been **428 school shootings** since 1999.
- Over **394,000 students** have been exposed to gun violence while at school.
- School gun violence has increased regionally, nationally, and globally since 2000.
- **AI is reshaping safety** strategies worldwide by enhancing security measures.

CONCLUSIONS

Key Findings & Conclusion:
- School shootings remain a major concern among students and staff, contributing to **heightened fears** about campus safety.
- Students seek **faste**r emergency responses and **more proactive** security measures.
- The U–M community is **open to innovation** and eager to enhance campus security.
- AI is increasingly seen as the **future of safety technology** and threat detection.

   Throughout our research, we observed a widespread concern about the potential for school shootings. While U–M has strong security measures in place, both students and staff recognize the need for solutions that offer real–time protection during emergencies. Given the demand for improved threat prevention, rapid emergency responses, and better communication, the ActuateUMICH App would be a valuable addition to U–M's safety strategy.

S.W.O.T.

STRENGTHS
OF U-M (RELATED TO VENTURE)
- Leading university in public research and technology
- Highly surveilled campus **(over 2,000 cameras)**
- Collaboration with local law enforcement
- U–M Generative AI efforts

WEAKNESSES
WITHIN U-M DPSS
- Communication amidst emergency events
- Seemingly uninformed student body on current safety protocols

OPPORTUNITIES
WITHIN U-M DPSS
- Growth mindset across U–M DPSS
- Large budget **($16 Million+ annually to DPSS)**
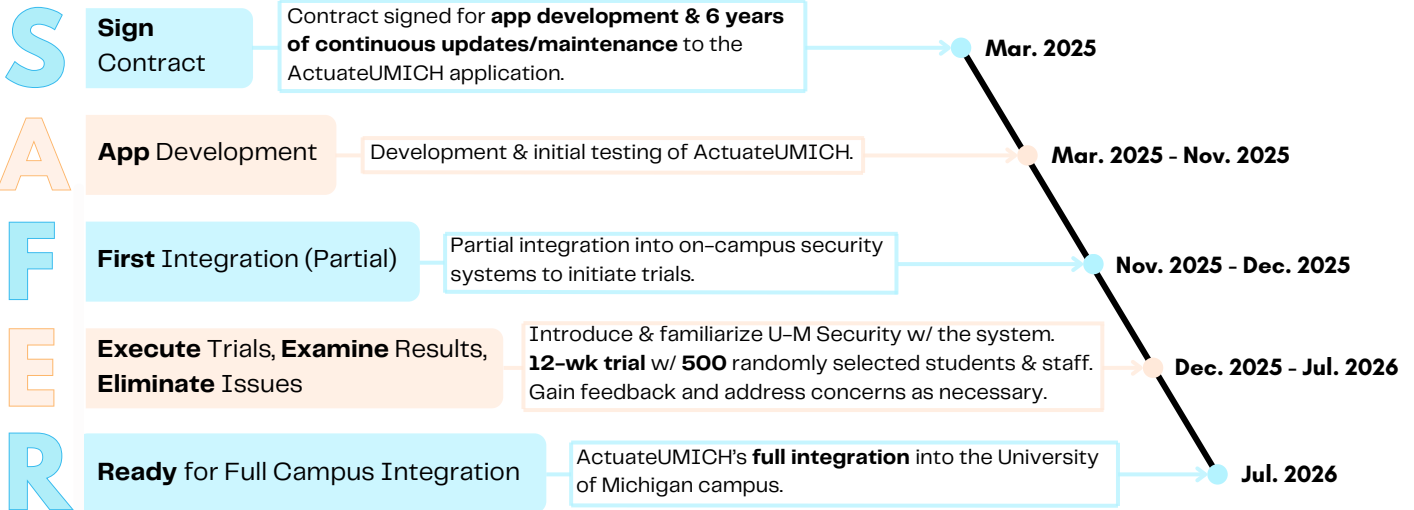- Optimistic attitude towards incorporation of AI security solutions

THREATS
TO ACTUATEUMICH VENTURE
- Privacy concerns regarding AI usage in security measures
- Lack of student interest in furthered security measures

TIMELINE

The **ActuateUMICH** project **DEVELOPMENT TIMELINE** is highlighted by the acronym "S.A.F.E.R."

S **Sign** Contract — Contract signed for **app development & 6 years of continuous updates/maintenance** to the ActuateUMICH application. → **Mar. 2025**

A **App** Development — Development & initial testing of ActuateUMICH. → **Mar. 2025 – Nov. 2025**

F **First** Integration (Partial) — Partial integration into on-campus security systems to initiate trials. → **Nov. 2025 – Dec. 2025**

E **Execute** Trials, **Examine** Results, **Eliminate** Issues — Introduce & familiarize U-M Security w/ the system. **12-wk trial** w/ **500** randomly selected students & staff. Gain feedback and address concerns as necessary. → **Dec. 2025 – Jul. 2026**

R **Ready** for Full Campus Integration — ActuateUMICH's **full integration** into the University of Michigan campus. → **Jul. 2026**

The impact and effectiveness of ActuateUMICH will be assessed every **six months** following its initial integration, with results compared to the original goals and expectations. These findings will be submitted to the University of Michigan's Division of Public Safety & Security for review. In addition, users will complete a brief survey at the end of each U-M semester to provide feedback on the app's performance.

BUDGET

The **ActuateUMICH** project **BUDGET** is highlighted by the acronym "A.C.T.U.A.T.E"

A App Development	**C** Campus Integration	**T** Testing & Trials	**U** Updates	**A** Annual Maintenance	**T** Taxes & Fees	**E** Expenditure Total (6 Years)
$925,000	$275,000	$750,000	$50,000 per year	$50,000 per year	$200,000	**$2,750,000**

Investment: **$2.75 Million**

Projected ROI: **$4.1 Million**

Projected Effect: **Avg. -21% Fewer Crimes Annually**

RETURN ON INVESTMENT

ActuateUMICH: Budget & Savings ($)
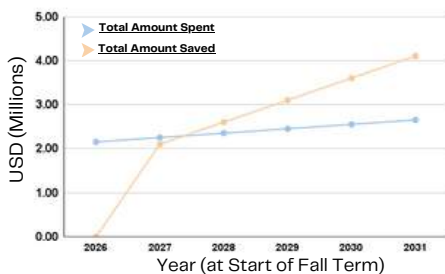
Investing in ActuateUMICH would deliver a significant financial return for the University of Michigan. U-M spends approximately $30 million annually on safety and security-related costs, including crime response, security personnel, legal liabilities, property damage, and general operations. With a $2.75 million investment over six years, our team projects that **U-M could save $4.1 million** (± $0.268 million, 95% Confidence Interval, based on 750 simulated trials) through the implementation of ActuateUMICH. Leveraging ActuateAI's proven capabilities, ActuateUMICH is projected to deliver a **150% return on investment**, making it a financially and strategically valuable security enhancement.

ActuateUMICH: Budget & Crime (%)
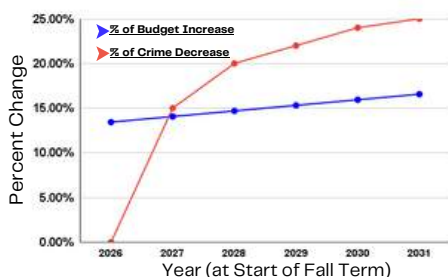
Implementing ActuateUMICH offers a significant reduction in crime rates in addition to its expected financial return. Our team projects that **ActuateUMICH will reduce crime by an average of 21% annually over five years**, reaching a 25% reduction by year five. This comes with a **modest 15% average annual budget increase**—a worthwhile investment considering the university's current $16 million annual security budget.

This reduction is driven by ActuateUMICH's AI-powered surveillance, real-time alerts, and automated emergency response, which enable **faster interventions, more efficient resource allocation, and stronger crime deterrence**. Beyond the projected financial savings, the potential for a safer campus makes **ActuateUMICH an essential step toward enhancing security and safety at the University of Michigan**.

U–M & ACTUATE

A. DESCRIPTION OF THE ORGANIZATION(S)

Organization (Receiving Service):

The **University of Michigan** (U–M) is a top-ranked public university located in Ann Arbor, Michigan. U–M is known for its academic excellence, diverse student body, and walkable campus. The university has a total enrollment of **52,855 students (34,454 undergraduate; 18,401 graduate)** and **over 8,000 faculty members**. U–M provides a vibrant student experience while prioritizing the safety and well–being of everyone on campus. The U–M Division of Public Safety & Security states, "Our vision [is] to become the global leader in safety and security services, exceeding all expectations." This statement serves as the foundation for the upcoming research project, which will focus on **implementing AI security solutions to benefit both students and staff on the U–M Ann Arbor campus**. With its strong security infrastructure, ample financial resources, and commitment to technological innovation, U–M is the ideal institution to implement our proposed AI–powered security app, ActuateUMICH. U–M has more than 2,800 active surveillance cameras, the university demonstrates a strong commitment to campus safety and is well–equipped to integrate AI–driven improvements. Additionally, U–M's security budget has the capacity to support investments in innovative safety initiatives, ensuring the development, implementation, and ongoing maintenance of the app.

In 2023, the University of Michigan (U–M) became the first university in the world to introduce its own generative AI tools. While U–M has made strides in integrating AI into productivity and lifestyle tools, it has yet to incorporate AI into its broader operations, like its security. However, U–M's previous integration of emerging technologies into campus operations further highlights their openness to adopting new technologies, such as ActuateUMICH, in enhancing their safety operations. Due to its dedication to pioneering advancements in AI, cybersecurity, and data–driven solutions, U–M offers an optimal environment for ActuateUMICH to elevate campus security and establish a new benchmark for AI-powered safety measures.

DIVISION OF PUBLIC SAFETY & SECURITY
UNIVERSITY OF MICHIGAN

VISION To become the global leader in safety and security services, exceeding all expectations

MISSION The University of Michigan Division of Public Safety and Security supports the mission of the University as a partner serving to ensure a safe and secure environment while improving the quality of life for all those living, learning, working, healing and visiting within our community.

Taken directly from "dpss.umich.edu"

Organization (Providing Service):

Actuate AI is a leading artificial intelligence (AI) and video analytics company that specializes in real–time, AI–driven surveillance for security and safety. By converting existing security cameras into intelligent, threat–detecting systems, Actuate tools enhance security while eliminating the need for costly new infrastructure. Its technology is already implemented in **more than 1,000 schools, various businesses, and in the U.S. military**; Actuate is known as a **trusted provider** of AI–powered security solutions.

Several key attributes make Actuate AI a prime tool for the University of Michigan's campus security needs:

- **Advanced AI–Powered Solutions** – Actuate's AI engine merges with existing surveillance technologies—in this case, U–M's 2,800+ camera security network—to detect threats like weapons and intrusions.
- **Cost–Effectiveness** – By utilizing existing surveillance techonology, Actuate reduces the need for costly new hardware and maintenance—it is a budget–friendly option.
- **Commitment to Privacy** – Actuate AI avoids using facial recognition and other tools that spur privacy concerns, ensuring compliance with privacy regulations and ethical security standards.
- **Alignment with U–M's Innovation** – U–M is committed to investing in cutting-edge technology, and partnering with Actuate, an emerging leader in AI, aligns with its goal of advancing future technologies.
- **U–M's Generative AI** – ActuateUMICH relies on a secure, reliable generative AI system to function effectively. With their own generative AI tools, U–M is an ideal partner, supplying the AI that powers ActuateUMICH's "security–bot" and notification system to deliver real–time safety updates while maintaining privacy and reliability.

By integrating Actuate AI's proven security solutions into their existing security measures, U–M can **leverage state–of–the–art AI technology in a cost–effective and privacy–conscious way**, ultimately improving the safety of their campus.

B. DESCRIPTION OF THE TARGET MARKET

ACTUATE AI TARGET DEMOGRAPHIC:

Actuate's software serves commercial properties, property managers, security teams, and high-traffic organizations across a myriad of industries like retail, healthcare, transportation, logistics, and corporate offices. It also supplies computer vision software to the U.S. military. With AI-driven solutions, **Actuate enhances security without requiring new infrastructure**, making it a scalable, cost-effective option.

ACTUATE AI TARGET PSYCHOGRAPHIC:

Actuate's **primary customers are large businesses** and organizations that value innovation, efficiency, and affordable security solutions. These forward-thinking companies seek to **enhance safety while reducing security costs** and are open to adopting advanced technologies to improve their operations.

UNIVERSITY OF MICHIGAN – CAMPUS COMMUNITY & CULTURE:

The University of Michigan is a diverse, high-achieving community with strong school spirit, academic excellence, and deep-rooted traditions. Home to **50,000+ students**, U-M's campus thrives on cutting-edge research, top-tier athletics, and a dynamic social scene, offering countless opportunities for engagement.

For ActuateUMICH to succeed, it must be an **essential tool to students** rather than just another menial app. Installation and use of the app is critical. To encourage this adoption, the app includes **features that seamlessly integrate into student life** such as customizable notifications, in-app incentives, and fundamental campus services like access to Wi-Fi. By making ActuateUMICH a practical and convenient resource, we will **ensure students recognize its importance, and necessity**, before they need it in an emergency situation.

ActuateUMICH TARGET DEMOGRAPHIC:

The primary users of ActuateUMICH are on-campus **undergraduate and graduate students, ages 18 to 30**, who are accustomed to using digital technology in their everyday lives. While security may not consistently be a top priority for students, younger generations value efficiency and convenience. ActuateUMICH will tap into this value of convenience by showcasing its ability to enhance students' daily lives, both during emergencies and in everyday situations.

ActuateUMICH TARGET GEOGRAPHIC:

The app will be **most useful in high-traffic campus areas**, including dorms, academic buildings, libraries, student unions, athletic facilities, and public transportation routes. Ensuring accessibility and visibility in these spaces will help **reinforce the app's role as a go-to safety tool** rather than another basic app on students' phones.

ActuateUMICH TARGET PSYCHOGRAPHIC:

College-aged young adults are often **selective about which apps they keep** on their phones. To gain traction, ActuateUMICH must **offer everyday value**, not just emergency alerts. Customization features—such as personalized notification preferences—will help prevent notification fatigue, making students more likely to keep and use the app. Additionally, because students are constantly on the move—whether walking, biking, or taking campus transportation —the app must provide timely and relevant updates that **integrate seamlessly into their daily routines.**

C. OVERVIEW OF THE ORGANIZATION'S CURRENT ARTIFICIAL INTELLIGENCE STRATEGIES AND USAGE

U-M ARTIFICIAL INTELLIGENCE USAGE OVERVIEW:

While the University of Michigan does not use AI in its surveillance systems, it has **established comprehensive policies** to ensure the secure, ethical, and effective use of AI across campus. These policies address data security, ethical considerations, accessibility, and responsible AI integration in academic and administrative contexts.

DATA SECURITY AND PRIVACY:

U-M prioritizes **protecting personal and institutional data when using AI tools**. AI applications may only process data classified as "LOW" sensitivity, such as public information, while sensitive data—including student records (FERPA), health information, and human subject research data—must not be processed through AI. Additionally, AI-generated code cannot be deployed in institutional IT systems without human review and compliance with secure coding standards.

ETHICAL USE AND ACADEMIC INTEGRITY:

U–M provides **clear guidelines for AI usage in academics**. For example, the Ross School of Business permits AI for brainstorming, refining ideas, and grammar checks, but prohibits generating entire drafts or completing assignments. Violations may be considered academic misconduct, leading to penalties such as failing an assignment or course.

DEVELOPMENT OF AI TOOLS:

To address concerns related to privacy, accessibility, and affordability, **U–M has developed its own suite of generative AI tools.** These proprietary tools**, U–M GPT,** a conversational AI assistant, and **U–M Maizey**, an AI data–sorting tool, are designed to be secure, equitably accessible, and free for the campus community, ensuring that data shared within these platforms remains confidential and is not used for external model training. This advanced AI infrastructure will play a key role in ActuateUMICH, powering its in–app chatbot and notification system to provide real–time safety updates while maintaining U–M's high standards for data security and privacy.

ETHICAL CONSIDERATIONS IN AI DEPLOYMENT:

Michigan Medicine, the university's medical center, has established the Clinical Intelligence Committee to oversee the **ethical integration of AI in clinical settings**. This committee collaborates with the U–M Law School to develop policies addressing liability and governance, ensuring that AI applications in healthcare are safe, transparent, and ethical.

SUMMARY:

In summary, the University of Michigan is **proactively managing the integration of AI by implementing policies that prioritize data security, ethical use and accessibility,** while also **fostering innovation** through the development of in–house AI solutions.

III. RESEARCH
METHODS USED IN THE STUDY

A. DESCRIPTION & RATIONALE OF RESEARCH METHODOLOGIES SELECTED TO CONDUCT THE RESEARCH STUDY

QUANTITATIVE

SURVEYS:

- 500 **U–M** Student "General Safety" Consensus Survey
- 30 **U–M** Faculty "General Safety" Consensus Survey
- 15 **U–M** Security Personnel "Room for Improvement" Survey

SECONDARY DATA ANALYSIS:

- MLive local news website
- U–M Division of Public Safety and Security website
- Reliable News Sources

QUALITATIVE

IN-PERSON CONFERENCES:

- 2 meetings with **U–M** Executive Director of Security, Eddie L. Washington, and team
- 1 Meeting with **U–M** Police Chief, Crystal James (20min)

INTERVIEWS & TESTIMONIALS:

- 4 **U–M** Student Interviews (20min each)
- 3 U–M Security Personnel Interviews (30min each)
- 20 **U–M** Student Testimonials
- 10 **U–M** Faculty Testimonials
- 5 **U–M** Security Personnel Testimonials

METHOD	*DESCRIPTION*	*RATIONALE*
1. "General Safety" Survey	We randomly selected **500 U–M students** and **30 U–M faculty members** to complete our "General Safety" survey. This digital survey included nine statements about the respondents **attitudes towards safety and the various security measures provided by U–M**. Respondents rated their agreement to the separate statements on a scale of 1 to 10, with 10 being the highest level of agreement and 1 being the lowest. Selected respondents had one week to finish the survey, after which U–M DPSS followed up. We ensured all responses were submitted within the same month.	The survey gathered insights into how students on campus perceive current safety measures, helping us better gauge **user satisfaction** with U–M's campus security protocols. We used this feedback to identify specific security weaknesses and developed our informed, research–backed ActuateUmich plan.

2. "Room for Improvement" Survey

We randomly selected **15 members of the U–M Campus Security Team** to complete a 'Room for Improvement' survey with nine statements **evaluating U–M's campus security protocols from an employee perspective.** Selected respondents had one week to finish the survey, after which U–M DPSS followed up. We ensured all responses were submitted within the same month. Respondents rated their agreement with each statement on a scale of 1 to 10, with 10 being the highest and 1 the lowest.

Surveying DPSS members gave us an insider perspective on current security protocols and their perceived effectiveness. The "Room for Improvement" survey helped assess **employee satisfaction**, which we used to design and organize ActuateUMICH's protocol logistics.

3. Secondary Data Analysis

The secondary data includes information from the university's website, such as safety plans, official updates, and its overall safety mission, as well as reliable news sources reporting on campus safety events and **statistics on past incidents of campus violence.** We integrated this data throughout the development of the ActuateUMICH project, using it to guide both the technical aspects and the key points to address. Our data collection focused on three areas: AI's role in security, its potential in campus environments, and the history of campus security incidents.

By reviewing past campus security events both at U–M and at other institutions, we gained valuable insights into **potential scenarios** that could occur on the U–M campus. We then combined these insights with the **current capabilities of AI** to develop help us develop the final ActuateUMICH application.

4. In-Person Conferences

We organized **in-person meetings** at U–M's Division of Public Safety and Security office with **five campus security leaders**, who kindly took the time to discuss the division's goals, values, and future plans. The goal of these 20–30 minute long discussions was to gain **insights into the logistics and objectives behind U–M's current campus security protocols.**

These in-person meetings gave us a deeper understanding of how U–M's security administration makes decisions and the **core values that shape their security approach.** We used this information to inform the development of the ActuateUMICH plan, ensuring the application was both **realistic and adaptable to U–M's goals.**

5. Interviews

We interviewed **four U–M undergraduate** students and **three campus security members** to gather key insights on campus safety and their **personal experiences.** These interviews provided selected representatives with the opportunity to share their individual opinions and stories about safety at U–M, as well as offer perspectives that represent the broader campus community.

Interviews with a diverse group of students and faculty revealed the underlying reasons behind the campus community's safety concerns, providing valuable **context for our survey results.** We used these insights to shape our objectives, **addressing perceived safety weaknesses** and enhancing satisfaction through the ActuateUmich plan.

6. Testimonials

We requested testimonials via email from **20 randomly selected students, 10 faculty members, and 5 U–M security personnel.** Like the interviews, these testimonials provided an opportunity for more individuals to share their **personal stories and opinions** about safety at U–M. Respondents had the option to base their answers on one of five general prompts, or they could choose to share their own thoughts on a self–chosen topic related to campus safety.

The testimonials from these participants provided genuine insights into their experiences, offering **honest and detailed feedback** without the constraints of a survey or on–the–spot pressure of interviews. These responses added **valuable context to our survey results** and helped explain why students and U–M staff hold specific opinions about campus safety.

B. PROCESS USED TO CONDUCT THE SELECTED RESEARCH METHODS

1. "GENERAL SAFETY" SURVEY

STATEMENTS

1. "I feel safe and secure on campus."
2. "I feel safe and secure on campus when alone."
3. "I feel safe and secure on campus when alone at night."
4. "I understand safety procedures that are currently in place."
5. "If an active shooter event was to occur right now, I would know what actions to take."
6. "When emergency situations have occurred in the past on campus, I have felt informed."
7. "When emergency situations have occurred in the past on campus, I have felt secure."
8. "I have never been involved in a dangerous altercation or accident on campus"
9. "I do not see room for improvement within campus security"

SAMPLING

Sampling method used:
Stratified Random Sampling

- Undergraduate student population split based on grade level, then randomly selected (125 per class).
- Staff population split by gender, then randomly selected (15 men, 15 women).

2. "ROOM FOR IMPROVEMENT" SURVEY

STATEMENTS

1 "U–M's security infrastructure effectively addresses major safety concerns."
2 "Security personnel receive sufficient training and resources."
3 "U–M's emergency response protocols are clear and effective."
4 "Campus security and local law enforcement coordinate well."
5 "Students and faculty are aware of safety policies and procedures."
6 "Surveillance systems effectively prevent crime."
7 "Staffing levels are sufficient for high–traffic areas."
8 "AI–powered security tools would improve campus safety."
9 "U–M proactively improves security based on threats and feedback."

SAMPLING

**Sampling method used:**
Simple Random Sampling.

- All Campus Security team members had an equal chance of being selected (15 total chosen to participate in the survey).

SAMPLING METHODS EXPLANATION

Stratified Random Sampling (used for General Safety Survey): Ensures that different subgroups (strata) within a population are properly represented in a sample. The population is first divided into distinct, non–overlapping groups based on a specific characteristic, and then random samples are drawn from each subgroup. This method improves the accuracy and diversity of the data by capturing insights from all key segments of the population.
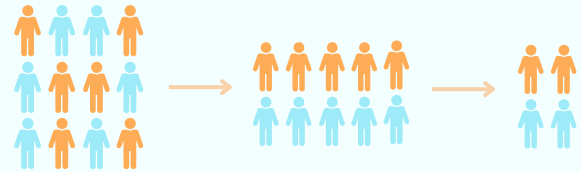
Simple Random Sampling (used for "Room for Improvement" Survey): Ensures that every individual in a population has an equal chance of being selected, eliminating selection bias. This method involves randomly choosing participants from the entire population without categorizing them into subgroups. By doing so, it provides an unbiased representation of the population and allows for generalizable insights based on purely random selection.
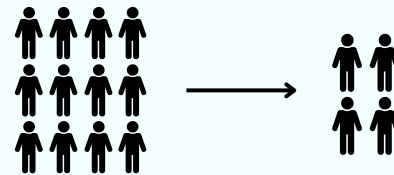
Random Sampling:	Reduces bias ⊘	Allows population generalization ⊘

3. SECONDARY DATA ANALYSIS

Secondary data refers to information previously collected and used for research purposes. For this project, we gathered data on the **University of Michigan's safety policies, campus security events, and AI applications in security by synthesizing credible sources.** Our data includes **official university resources**, such as the U–M Division of Public Safety and Security website, which provides safety plans, updates, and the university's overall security mission. Additionally, we reviewed reports from **reputable news outlets** like CNN, advocacy organizations such as March for Our Lives, and academic insights from institutions like Stanford AI.

To ensure credibility, we prioritized **recent publications** from well–established sources and **cross–referenced information** for accuracy. A full list of references is available in the bibliography.

4. IN-PERSON CONFERENCES

To gain direct conversations about U–M's campus security operations, we organized in–person conferences with **key leaders from the Division of Public Safety and Security (DPSS).** These meetings were scheduled via email and held at the DPSS main office (1239 Kipke Dr, Ann Arbor, MI 48109).

We met with **five campus security leaders** to discuss the university's safety policies, priorities, and the feasibility of ActuateUMICH. The discussions provided valuable perspectives on DPSS's **goals, values, and future plans.** Specifically, we conducted:

- One **30–minute meeting** with **U–M Executive Director of Security**, Eddie L. Washington, and his team.
- One **20–minute meeting** with **U–M Police Chief**, Crystal James.

These conversations helped refine our understanding of campus security needs and how ActuateUMICH could align with existing safety initiatives.

5. INTERVIEWS

Using a random sampling method, we selected **four U–M undergraduate students** and **three campus security members for interviews.** These were held at the DPSS main office, where participants shared their thoughts and experiences on U–M's current safety measures and other campus safety topics. The interviews were conducted in a casual format, with student sessions lasting 20 minutes and faculty sessions 30 minutes.

Faculty Interview Questions:

1. How effective do you think U–M's current safety policies are in protecting students and staff?

2. Based on recent safety incidents at other colleges, what specific policies or strategies should U–M consider implementing?

3. What improvements would you suggest to strengthen U–M's preparedness for future safety threats or emergencies?

4. What role do you think AI can play in enhancing campus safety, and what concerns, if any, do you have about its implementation?

5. Do you feel faculty members have received adequate training to respond to emergencies, such as an active shooter situation?

6. Are there any additional concerns or recommendations you have regarding campus safety?

Student Interview Questions:

1. How safe do you feel on campus during the day and at night? What factors contribute to this feeling?

2. Have you ever felt unsafe on campus? If so, what happened, and how did you respond?

3. What are your thoughts on using AI for campus safety, such as surveillance, threat detection, or emergency alerts?

4. Do you think AI-based safety technology is reliable? What concerns, if any, do you have about privacy, accuracy, or misuse?

5. How have recent campus emergencies, like the MSU mass shooting, influenced your perception of safety or daily habits at U–M?

6. TESTIMONIALS

To gather diverse perspectives on campus safety, we requested testimonials via email from **20 randomly selected U–M students, 10 faculty members, and 5 campus security personnel.** Participants were asked to share their thoughts, experiences, and suggestions regarding U–M's safety measures. These testimonials provide quick insight into the community's concerns, experiences, and hopes for campus security improvements.

IV. FINDINGS &
CONCLUSIONS OF THE STUDY

A. FINDINGS OF THE RESEARCH STUDY

SURVEY FINDINGS

OVERVIEW & KEY STATISTICS:

Our survey revealed key concerns among U–M undergraduate students regarding campus safety. Respondents rated their sense of security and preparedness on a scale of 1–10, highlighting significant areas for improvement:

- Only **38.4% of students feel safe** when alone on campus at night.
- **64.8% believe** U–M's current security measures **need improvement.**
- **77.8%** are **unsure or indifferent** about how to **respond to an active shooter** situation.
- Just **38.4%** reported that **campus security measures** are **quick and easy** to use during emergencies.
- Only **32.4%** reported feeling **well-informed during past emergency situations.**

These findings underscore a strong student desire for enhanced safety measures, better emergency preparedness, and clearer communication during crises.

SECONDARY DATA FINDINGS

GROWING CONCERN FOR CAMPUS SAFETY:

Campus security is a growing concern in the U.S., with **17 school shooting victims in Michigan (2018–2023)** and **428 victims nationwide since 1999**, impacting over **394,000 students.** The trend continues, with **40 school shootings in 2024 alone.** While the U.S. leads in campus gun violence, global incidents, like Sweden's deadliest school shooting in 2025, highlight broader safety challenges. These figures stress the need for stronger security measures.

CAMPUS SECURITY TRENDS – REGIONAL, NATIONAL, AND GLOBAL PERSPECTIVES

Regional Security Events (Michigan):
- ○ 2023 Michigan State University shooting: **8 casualties (3 killed, 5 injured)**
- ○ 2021 Oxford High School shooting: **11 casualties (4 killed, 7 injured)**
- ○ 17 victims in Michigan school shootings (2018–2023)
- • These incidents **emphasize the local urgency of improving security measures** in educational institutions across Michigan, including the University of Michigan (U–M).

National Security Trends (United States):
- ○ 428 school shootings since 1999
- ○ **394,000+ students exposed to gun violence** incidents at school
- ○ 40 school shootings in 2024 alone
- • The rising trend of school–related gun violence in the U.S. signals a pressing need for innovative security solutions and better preparedness strategies in higher education institutions.

Global Security Trends:
- ○ The U.S. leads in school shootings, but global incidents are increasing.
- ○ Feb 2025, Sweden: 10 killed in the country's deadliest school shooting.
- • Growing international threats highlight the need for global security cooperation and advancements.

Proximity of the University of Michigan (U–M) to MSU & Oxford
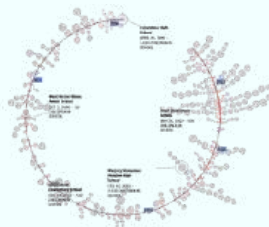
Each dot represents a student exposed to school gun violence, starting 1999
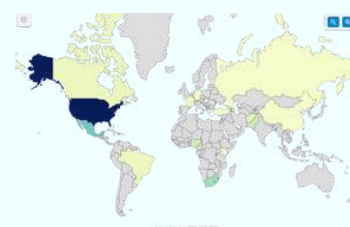
School shootings per country from 2009–2018

U–M'S CURRENT SECURITY MEASURES

The University of Michigan's Division of Public Safety & Security has implemented several notable security initiatives, including:

- • **Police Partnerships –** Collaboration with local law enforcement for rapid response.
- • **Emergency Blue Light Phones –** Available at various campus locations for quick access to emergency services.
- • **Nighttime Transportation Services –** Bus routes and low–cost cabs for safer nighttime travel.
- • **U–M Emergency Alert System –** Used for active violence incidents and weather emergencies.

AI WITHIN CAMPUS SECURITY & PRIVACY CONSIDERATIONS

Artificial Intelligence (AI) has the potential to transform campus security by enhancing threat detection, real–time monitoring, and response times. AI–powered surveillance systems can:

- • Identify unattended packages, suspicious behavior, and potential security threats in real–time
- • Reduce human error by providing early alerts for proactive responses

However, AI integration in security also raises ethical concerns. In February 2025, Google faced backlash for quietly retracting its commitment not to use AI for surveillance which fueled debates on ethical implications and privacy risks. Companies working with AI security solutions are constantly looking to address these issues.

IN-PERSON CONFERENCE FINDINGS

CONFERENCE 1 - DECEMBER 1, 2024

Focal Points of Conversation:
- • Day–to–Day Operations
- • Existing Safety Plan
- • U–M's Approach to Safety

U–M Staff Present:
- • Eddie L. Washington Jr., Executive Director of U–M DPSS
- • Thernesa Rankin, Executive Assistant
- • Robert Neumann, Interim Senior Director Chief of Operations

Key Takeaways:

- • The University of Michigan strives to become a "global leader in safety and security services."

- • Eddie L. Washington stressed that the team is constantly looking to reduce annual costs related to crimes and incidents on campus.

- • Division of Public Safety and Security's strategic priorities are:

  –Prevent Harm Against Persons **–Protect Assets** **–Ensure Compliance**

  –Improve Quality of Life **–Enhance Workforce & Organizational Development**

- • The Division of Public Safety and Security has five core values:

1. Service   2. Integrity   3. Accountability & Trust   4. Diversity, Equity, & Inclusion   5. Excellence & Professionalism

Focal Points of Conversation:
- Day-to-Day Operations
- U-M DPSS Goals and Visions
- Areas for improvement and AI Incorporation

U-M Staff Present:
- Crystal James, Police Chief
- Paul DeRidder, Deputy Chief of Police

Key Takeaways:
- In adherence to the Division of Public Safety & Security's mission to become a "global leader in safety and security services", U-M would be eager to discuss and **implement new technology** in order to improve the safety of U-M.
- U-M has already adopted a few AI tools of its own, like U-M GPT and U-M Maizey, which are both tools mainly used in to accelerate study habits and workplace tasks. U-M would is willing and eager to **expand its usage of AI tools.**
  - Mrs. James and Mr. DeRidder both expressed enthusiasm at the potential of incorporating AI solutions into security operations.
- Changes to the U-M security plan require progressing through a multi-step approval process.

U-M DPSS:	S T R A T E G I C	P R I O R I T I E S		
Prevent Harm Against Persons	**Protect Assets**	**Ensure Compliance**	**Improve Quality of Life**	**Enhance Workforce & Organizational Development**

INTERVIEW FINDINGS

Students Interviewed:
- Maggie Edison – Class of 2028
- Jeffrey Shelton – Class of 2025
- Sierra Neal – Class of 2026
- Andre Pyrrhany – Class of 2026

Security Personnel Interviewed:
- Luke Daniel – Dispatch Services Supervisor
- Melissa Overton – Deputy Chief of Police & Public Information Officer
- Stacy Richmond – Road Patrol Sergeant

STUDENTS:

Maggie Edison, Class of 2028 (Interviewed on November 11, 2024):
A lifelong Ann Arbor resident, Maggie was familiar with U-M's campus before enrolling but is surprised by how uneasy she feels walking home alone as a freshman. Despite existing safety measures, she doubts their ability to prevent harm quickly enough. She supports AI integration in campus security, provided it improves response times.

Jeffrey Shelton, Class of 2025 (Interviewed on November 12, 2024) :
Originally from Los Angeles, Jeffrey finds Ann Arbor safer but stresses that U-M must prioritize security against threats like school shootings. He expressed high receptiveness to integrating AI into campus safety, noting that students already use AI daily, and believes it can improve response times and overall security.

Sierra Neal, Class of 2026 (Interviewed November 12, 2024):
Sierra, from a small town outside Kansas City, finds Ann Arbor a bit overwhelming but appreciates U-M's security. Though concerned about threats like school shootings, she is enthusiastic about AI's potential to enhance emergency responses and overall campus safety, noting its significant growth and promise.

Andre Pyrrhany, Class of 2026 (Interviewed November 12, 2024):
Andre has lived in Ann Arbor since he was three years old. He values community safety but says he is "constantly mindful of modern threats." He supports prioritizing stronger security measures at U-M and believes that AI's rapid processing and alert capabilities could significantly improve campus safety.

SECURITY PERSONNEL:

Luke Daniel, Dispatch Services Supervisor (Interviewed on November 15, 2024):
Mr. Daniel praised U-M's Division of Public Safety and Security, calling it one of the best campus security programs in the country. While confident in the team, he voiced deep concern over active shooter threats—citing incidents like the MSU shooting—and stressed the need for ongoing updates to security plans and technology.

Melissa Overton, Deputy Chief of Police & Public Information Officer (Interviewed November 15, 2024):
Mrs. Overton expressed confidence in U-M's security protocols, emphasizing proactive measures, advanced technology, and transparent communication. While acknowledging challenges, she stressed that continuous training and strategic investments keep U-M well-prepared for potential threats.

Stacy Richmond, Road Patrol Sergeant (Interviewed on November 15, 2024):
Stacy expressed concern about school shootings, noting that while U-M's security team is strong and well-equipped, rapid-response capabilities remain a challenge during fast-evolving threats. As a road patrol sergeant who encounters dangerous situations daily, she stressed that quick emergency responses can mean the difference between life and death.

Summary of Interviews:
The interviews that we conducted in November with students and campus security staff provided useful context and reasoning behind the trends that we saw in the survey results. Throughout these vital conversations, we learned that **the possibility of a school shooting played a large role in how students and security viewed, and evaluated, U–M's campus security measures.** In addition, many students and security members are extremely receptive to the idea of implementing higher technology, like Artificial Intelligence, into campus security measures. Ultimately, these interviews reinforced our understanding of the overall need for quicker and more targeted responses to safety threats.

TESTIMONIAL FINDINGS

SIGNIFICANT RESPONSES:

Leia, Professor:
"I think that U–M should, without a doubt, put a stronger emphasis on addressing threats like school shooters."

Liam, Senior, Class of 2025:
"I had friends at MSU during the 2023 shooting. It was heartbreaking and made me think about what I'd do if it happened [at Michigan]—honestly, I have no idea."

Jill, Freshman, Class of 2028:
"I'm aware of the campus security measures, but I don't feel there's a clear plan for handling an active shooter or immediate threat. What are students supposed to do besides run?"

Amelia, Junior, Class of 2026:
"Coming from a smaller town, I wasn't used to the big crowds. Safety is definitely more of a worry for me when I'm at school––especially with all the craziness that is happening in the world."

Testimonials echoed survey and interview findings, highlighting concerns over campus safety and the **need for faster emergency responses**. Many **supported AI integration**, reinforcing its potential to enhance real–time threat detection and security measures.

B. CONCLUSIONS BASED ON THE FINDINGS

RESEARCH CONCLUSIONS

1. Regional, National, and Global Security & Crime Trends
The **increasing frequency of school shootings,** both in Michigan and nationwide, underscores the urgent need for enhanced campus safety measures. While the U.S. has the highest rates of school–related gun violence, incidents around the world further emphasize the need for stronger security strategies at educational institutions. Notably, recent events like the 2023 Michigan State University shooting and the 2021 Oxford High School shooting—both of which occurred within an hour of the University of Michigan's Ann Arbor campus—highlight the proximity of such threats and the importance of preparedness.

2. Student Attitudes Toward Current Safety Measures
The widespread occurrence of school shootings across the nation has significantly affected students' confidence in their safety on campus. Many students reported that hearing about incidents at other schools, especially those close to home, has made them **lack confidence in current campus safety protocols.** Specifically, students expressed concerns that the University of Michigan does not have enough targeted measures for specific emergencies, such as active shooter situations.

3. Campus Priorities in Safety Plans
Through extensive discussions and interviews, we identified **several key priorities** that students and staff believe should be incorporated into campus safety plans. The top priorities for students, staff, and security include:
- Quick response times
- Clear communication during emergencies
- Protection of privacy and data, especially with new technologies
- Targeted measures for specific emergency situations, such as active shooter events

STRATEGIC PLAN

A. OBJECTIVES & RATIONALE OF THE PROPOSED STRATEGIC PLAN

THE ACTUATEUMICH APPLICATION

ActuateUMICH is an **AI-powered security app** designed to **enhance campus safety at the University of Michigan.** Built on Actuate AI's proven engine, the app continuously analyzes surveillance footage, detects potential threats, and provides real-time safety updates. By **integrating Actuate's reliable AI-driven surveillance monitoring system** with **U-M's generative AI**, ActuateUMICH powers an intuitive in-app "security-bot" and notification system, offering users instant access to security insights and personalized alerts. This ensures a seamless, responsive safety experience, addressing concerns from everyday hazards like traffic congestion to high-risk emergencies such as active shooter situations.

OBJECTIVES:

Enhance Campus Safety – Use AI-powered surveillance to detect threats early and provide real-time alerts to students and security personnel.

Improve Emergency Response – Enable faster and more coordinated security responses through AI-driven insights and direct administrator oversight.

Reduce Crime Rates – Leverage AI to proactively monitor suspicious activity, leading to an estimated 21% reduction in crime over six years.

Minimize Security Costs – Optimize security spending by reducing incident-related expenses, leading to an expected $4.1 million in savings over six years.

Ensure User Privacy – Maintain strict confidentiality with encrypted data, no facial recognition, and no administrator access to personal user information.

RATIONALE:

AI-Driven Threat Detection: Our research study revealed that the U-M campus community highly values speed and targeted strategies for situations like an active shooter. With its real-time analysis and pattern recognition capabilities, AI-powered surveillance is well-suited to address these priorities on campus to improve user satisfaction and reduce overall crime.

Seamless User Integration: Our extensive interviews, surveys, and testimonials revealed that during a campus emergency, one of the biggest concerns with the current U-M security measures is their inability to effectively inform students. It is obvious that clear communication is a top priority for students and staff when it comes to security protocols. With its instantaneous alert system, the app is designed to be quick, intuitive, and customizable, preventing notification fatigue while ensuring critical alerts reach all users in emergencies.

Cost-Effectiveness: Actuate AI prioritizes delivering cost benefits to the receiving service. Although the initial investment for U-M is $2.75 million, the projected savings and crime reduction make the cost worthwhile, maintaining Actuate's promise and maximizing the return on investment (ROI). Furthermore, by ensuring that ActuateUMICH is a cost-effective solution, U-M will be able to sustain the integration of AI into its security system, ultimately enhancing campus safety for more students.

Trusted AI Provider: The U-M campus community prioritizes user privacy when integrating new technology. Actuate AI, trusted by the U.S. military, is a highly reliable security system specifically tailored for the university environment, providing assurance that it will protect U-M's data.
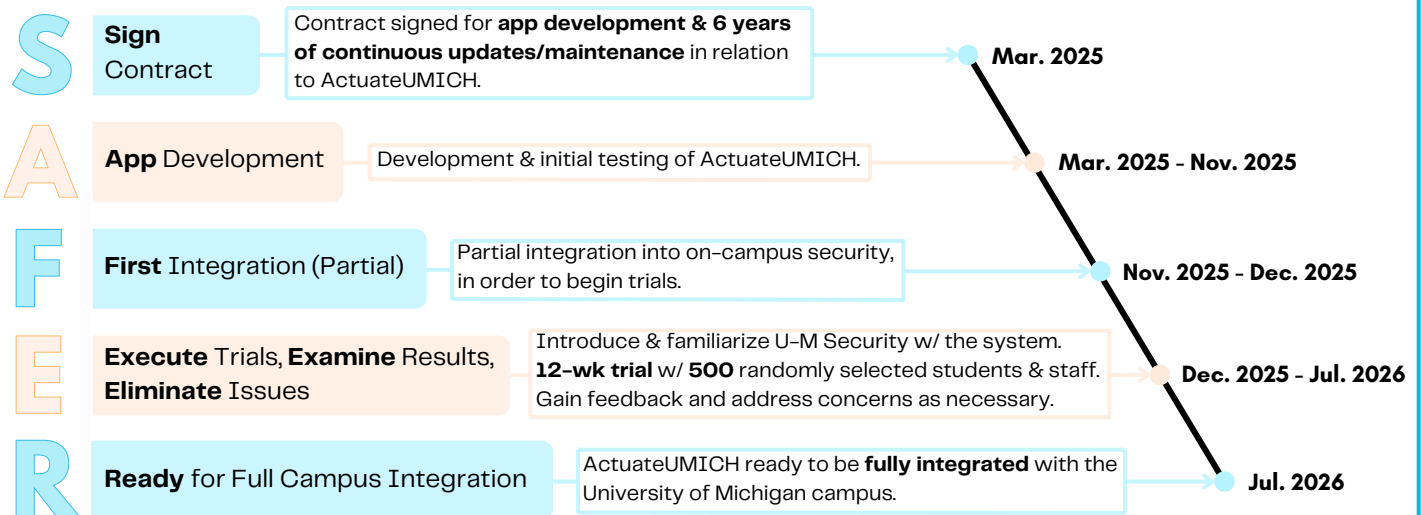
B. PROPOSED ACTIVITIES & TIMELINES

1. ActuateUMICH App: To enhance campus security through artificial intelligence, the ActuateUMICH App will serve as a central hub for students, faculty, and security personnel. The app will feature AI-powered threat detection, real-time emergency alerts, and instant incident reporting. Designed for both mobile and web use, the app will integrate seamlessly with existing campus safety infrastructure, ensuring a user-friendly and accessible security solution.

2. System Integration: A critical aspect of this initiative is system integration, where ActuateUMICH will be connected to the university's security databases, surveillance cameras, and access control systems. AI-driven data analytics will monitor and detect potential threats in real time, while automated notifications will provide instant alerts to students and security personnel. This integration will enhance the efficiency of emergency responses and proactive threat management, ensuring a safer campus environment.

3. Security Personnel Familiarization: For the system to be effective, security personnel must be thoroughly familiarized with its features and functionalities. Training programs will be conducted to equip staff with the necessary skills to interpret AI-driven insights and manage security incidents using the new technology. Simulated drills will further prepare security teams by integrating AI-assisted emergency response protocols, ensuring smooth implementation and practical application. Additionally, policy updates will be made to align with the evolving security landscape and AI-based recommendations.

4. Student Body Familiarization & Marketing: To maximize adoption from the student body, the plan includes a student-focused marketing and familiarization campaign. Awareness efforts such as social media promotions, workshops, and informational sessions will introduce the app and educate students on its usage. A user-friendly interface will ensure easy navigation, while an integrated feedback mechanism will allow students to suggest improvements, enhancing both functionality and engagement.

DEVELOPMENT TIMELINE - S.A.F.E.R.

S — **Sign** Contract — Contract signed for **app development & 6 years of continuous updates/maintenance** in relation to ActuateUMICH. → **Mar. 2025**

A — **App** Development — Development & initial testing of ActuateUMICH. → **Mar. 2025 - Nov. 2025**

F — **First** Integration (Partial) — Partial integration into on-campus security, in order to begin trials. → **Nov. 2025 - Dec. 2025**

E — **Execute** Trials, **Examine** Results, **Eliminate** Issues — Introduce & familiarize U-M Security w/ the system. **12-wk trial** w/ **500** randomly selected students & staff. Gain feedback and address concerns as necessary. → **Dec. 2025 - Jul. 2026**

R — **Ready** for Full Campus Integration — ActuateUMICH ready to be **fully integrated** with the University of Michigan campus. → **Jul. 2026**

After integration, the impact and effectiveness of ActuateUMICH will be **evaluated every six months, with results compared against initial performance indicators.** These findings will be sent to the University of Michigan's Division of Public Safety & Security for review. Additionally, users will provide feedback through a brief survey at the end of each U-M semester to assess app performance.

ActuateUMICH will be full integrated and operational by the 2026 Fall Semester. Some important dates after full integration include:
- Initiation of app promotion on digital screens and billboards across campus: **July 20th, 2026**
- First ActuateUMICH Email sent to entire student body for 2026-2027 Fall Semester: **August 10th, 2026**
- Explanation and marketing of app during Club Fair: **August 28th, 2026**
- Promotion during halftime of first home football game: **September 5th, 2026**
- Promotion & User Surveys at Winter Commencement: **December 12th, 2026**
- Promotion & User Surveys at Spring Commencement: **May 1st-3rd, 2027**

1. *Actuate*UMICH APP

USER VERSION

The user version of ActuateUMICH is designed to provide students, faculty, and staff with real-time safety insights, personalized alerts, and seamless access to security resources. Through AI-powered surveillance analysis and U-M's generative AI chatbot, the app helps users stay informed about potential threats, campus-wide emergencies, and everyday safety concerns.
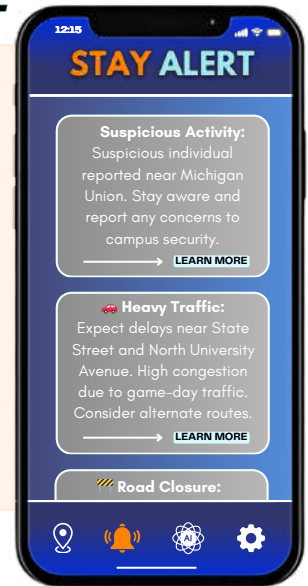
CAMPUS MAP

CAMPUS MAP

Search Map

The **Campus Map** in ActuateUMICH integrates with Google Maps to enhance campus safety and navigation. Users receive real-time alerts about protests, security incidents, and other events, with **location tracking to assess risks and adjust routes.** Beyond safety, the map helps locate buildings and key landmarks, ensuring users stay informed and navigate campus confidently.
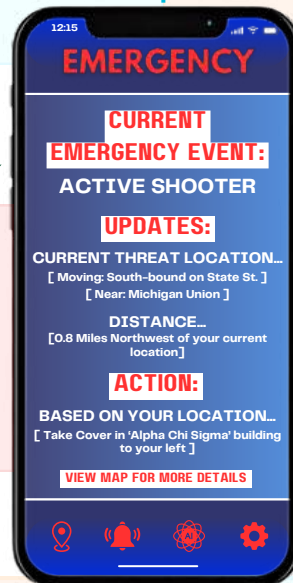
STAY ALERT

The **Stay Alert** page is the central hub for **all important notifications** in ActuateUMICH. Each alert provides a brief description of what the AI has detected across campus, including its nature and location. Users can tap "Learn More" on any notification to access detailed information about the event, ensuring they stay informed and prepared in real time.

STAY ALERT

Suspicious Activity:
Suspicious individual reported near Michigan Union. Stay aware and report any concerns to campus security.
→ **LEARN MORE**

Heavy Traffic:
Expect delays near State Street and North University Avenue. High congestion due to game-day traffic. Consider alternate routes.
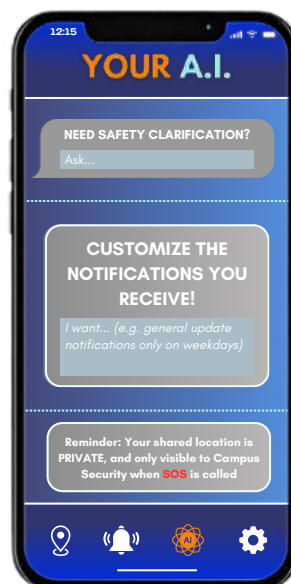→ **LEARN MORE**

Road Closure:

EMERGENCY

The **Emergency** page activates during campus-wide emergencies, providing **real-time AI-driven updates on the situation**. If location sharing is enabled, users receive personalized safety instructions to help them navigate the crisis.

EMERGENCY

CURRENT EMERGENCY EVENT:
ACTIVE SHOOTER

UPDATES:
CURRENT THREAT LOCATION...
[Moving: South-bound on State St.]
[Near: Michigan Union]

DISTANCE...
[0.8 Miles Northwest of your current location]

ACTION:
BASED ON YOUR LOCATION...
[Take Cover in 'Alpha Chi Sigma' building to your left]

VIEW MAP FOR MORE DETAILS

The page reports threat movement, informs users about security and law enforcement response, and integrates with the Campus Map for visual awareness. **Designed for critical situations like active shooter events**, Actuate's AI, trusted by the U.S. military, ensures users receive reliable, actionable guidance to stay as safe as possible.
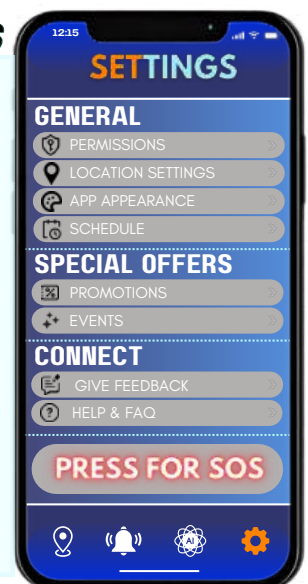
YOUR A.I.

YOUR A.I.

NEED SAFETY CLARIFICATION?
Ask...

CUSTOMIZE THE NOTIFICATIONS YOU RECEIVE!
I want... (e.g. general update notifications only on weekdays)

Reminder: Your shared location is PRIVATE, and only visible to Campus Security when SOS is called

The **Your A.I.** page allows users to interact with the app's AI, powered by U-M's generative AI, for **campus safety-related questions**. Users can customize notifications, training the AI to prioritize alerts based on their schedule and safety concerns, reducing notification fatigue. During campus-wide emergencies, however, all users receive critical alerts to ensure everyone stays informed.

SETTINGS

The **Settings** page lets users **customize app preferences, permissions, and appearance**. Shared location data remains confidential and is only shared with security when the SOS button is activated, in which case campus security is provided with real-time updates via AI surveillance of the SOS caller's location. Users can also toggle light/dark mode, access Help & FAQ, and submit direct feedback to improve the app's performance.

SETTINGS

GENERAL
PERMISSIONS
LOCATION SETTINGS
APP APPEARANCE
SCHEDULE

SPECIAL OFFERS
PROMOTIONS
EVENTS

CONNECT
GIVE FEEDBACK
HELP & FAQ

PRESS FOR SOS

ADMINISTRATOR VERSION

The Administrator Version of ActuateUMICH grants select **security personnel direct access to campus surveillance** feeds within the app. Administrators can issue safety notifications and make system adjustments, though any notification changes require personal approval from Eddie L. Washington, Executive Director of Security. Additionally, designated administrators manually review flagged footage for suspicious or dangerous activity, ensuring a proactive and informed security response.

This version maintains strict oversight and control, empowering security personnel to swiftly assess threats and enhance campus safety.

ADMINISTRATOR VERSION BREAKDOWN:

1. Advanced Security Features
- Live Surveillance Feed Access – Administrators can monitor real-time camera footage across campus, improving situational awareness.
- AI-Flagged Activity Review – The system automatically detects suspicious behavior, flagging footage for manual review by security personnel.

2. Manual Override & Custom Alerts
- Administrators can issue immediate safety alerts (e.g., lockdown notices, evacuation orders) directly through the app.
- Administrators can adjust system settings, but any notification changes require approval from Eddie L. Washington, Executive Director of Security, to ensure responsible usage.

3. Emergency Coordination & Response
- During an active emergency, administrators receive AI-generated situational reports to help coordinate security personnel more effectively.
- The system provides real-time movement tracking of threats (based on surveillance data), helping law enforcement strategize responses.

4. Integration with Existing Security Infrastructure
- ActuateUMICH is designed to complement existing campus security systems, not replace them.
- The app can sync with U-M's current emergency protocols, including police dispatch systems and emergency notification networks.

CYBERSECURITY:

The Administrator Version of ActuateUMICH is safeguarded by robust cybersecurity protocols to **prevent unauthorized access and ensure data integrity**. End-to-end encryption protects all surveillance feeds and communications, ensuring only authorized personnel can access sensitive information. Multi-factor authentication (MFA) and role-based access controls further secure the system, **restricting critical functions to approved administrators only.** Additionally, regular security audits, intrusion detection systems, and AI-driven threat monitoring help identify and mitigate potential cyber risks in real time. These measures ensure that campus security personnel can operate with confidence, knowing that their tools remain secure, private, and resilient against cyber threats.

ADDRESSING PRIVACY CONCERNS:

ActuateUMICH prioritizes user privacy, ensuring that **location data remains completely confidential**. Administrators cannot access user locations, which are only shared when the SOS button is activated. The SOS system includes safeguards to prevent accidental activation, ensuring location sharing is purposeful and limited to emergency response. Additionally, the app **does not use facial recognition**, preserving the personal privacy of all individuals on campus.

To further protect users, ActuateUMICH **does not store any personal data once the app is deleted.** While active, all user data remains confidential and inaccessible to administrators, reinforcing a strict separation between security monitoring and individual privacy. The app also employs secure encryption protocols to protect all communications, preventing unauthorized access. By maintaining strict privacy controls and limiting data access, ActuateUMICH ensures safety without compromising personal freedoms.

2. SYSTEM INTEGRATION

SEAMLESS CONNECTION WITH EXISTING INFRASTRUCTURE:

ActuateUMICH is designed to seamlessly integrate with the University of Michigan's **existing security infrastructure**, enhancing campus safety through AI-powered automation. The system connects with surveillance cameras, access control systems, emergency communication channels and monitoring software, ensuring a comprehensive security network. By leveraging AI-driven analytics, ActuateUMICH processes data from multiple sources to enable predictive threat detection and rapid response coordination, improving overall campus security efficiency.

INTEGRATION WITH EMERGENCY RESPONSE SYSTEMS:

The app integrates directly with emergency response systems, **utilizing an AI-powered chatbot to communicate** real-time evacuation routes, safety instructions, and live updates during critical situations. This feature helps streamline communication, offering immediate guidance to individuals before emergency responders arrive, reducing confusion and improving safety outcomes.

AI-POWERED CAMPUS SURVEILLANCE:

AI-powered campus surveillance further **strengthens security by analyzing movement patterns and detecting anomalies** that may indicate threats. ActuateUMICH can identify unauthorized access, suspicious behavior, or potential security risks, working alongside existing monitoring tools to minimize false alarms and ensure law enforcement focuses on real threats.

AUTOMATED THREAT DETECTION & RESPONSE:

Automated threat detection and response allow the system to **continuously learn from past incidents, improving its ability to recognize potential dangers.** When a threat is detected, instant notifications are sent to security personnel, enabling rapid intervention. In extreme situations, the system triggers lockdown protocols and sends emergency alerts to students and staff, ensuring a coordinated and effective response to campus threats.

3. SECURITY PERSONNEL FAMILIARIZATION

AI AWARENESS & TECHNICAL TRAINING:
- Introduces security personnel to AI-driven threat detection and predictive analytics.
- Gives hands-on experience with the platform to interpret AI-generated alerts.

REAL-TIME SIMULATION DRILLS:
- Simulated emergency scenarios (e.g., active threats, unauthorized access, fire evacuations).
- Tests security teams' ability to utilize AI-driven insights and refine response protocols.

INCIDENT MANAGEMENT & DECISION-MAKING TRAINING:
- Teaches officers how to analyze AI threat assessments and verify accuracy.
- Emphasizes human oversight to prevent false positives from triggering unnecessary security measures.

ONGOING AI SUPPORT & ADAPTATION:
- Provides access to a help desk, instructional manuals, and refresher courses.
- Implements a feedback loop where security teams can report challenges and suggest improvements.

PROACTIVE & TECHNOLOGY-DRIVEN SECURITY APPROACH:
- Combines AI-powered security tools with human expertise for a highly adaptive security system.
- Ensures a safe and efficient campus environment for students and staff.

4. STUDENT MARKETING AND FAMILIARIZATION

To ensure **widespread adoption and engagement with ActuateUMICH**, a comprehensive marketing strategy will be implemented to familiarize students with the platform. This strategy will include incentives, targeted outreach, hands-on training, and ongoing integration of user feedback.

INCENTIVES FOR ADOPTION:

To encourage students to install the app , ActuateUMICH will **partner with businesses** around campus such as Dunkin' Donuts, Sweetwaters, and Panera to provide exclusive coupons. Students will receive these benefits based on set parameters for continuous app usage. Additionally, to maximize participation, ActuateUMICH will be **linked to the campus Wi-Fi system.** Students and staff will be required to download the app to access U-M's secure Wi-Fi on their mobile device, ensuring broad engagement. (This requirement does not apply to the M-Guest Wi-Fi network.)

FEEDBACK & CONTINUOUS IMPROVEMENT:

To ensure long-term adoption, ActuateUMICH will incorporate ongoing student feedback and adaptation based on user insights:

- **User Feedback & Surveys:** In-app surveys and social media polls will collect student suggestions and usability reports, with incentives offered for valuable input.
- **Beta Testing & Early Adopter Program:** Select students will have early access to test features and will provide insights before the full-scale launch.
- **Student Ambassadors & Peer Advocacy:** A team of student ambassadors from campus organizations (Greek life, student government, and athletic teams) will promote ActuateUMICH through peer-to-peer recommendations.

**HANDS-ON TRAINING & FAMILIARIZATION:**

Beyond marketing, the initiative will ensure students feel comfortable using ActuateUMICH through interactive training methods:

- **In-App Guided Tour:** First-time users will receive an interactive walk-through, guiding them through features such as reporting incidents and enabling emergency notifications.
- **Workshops & Training Sessions:** Short, student-friendly training sessions will be organized, with Resident Advisors (RAs) and student organizations helping to host security awareness workshops and live demos.
- **Incentive-Based Engagement:** A points-based system will reward students for familiarizing themselves with the app. Prizes, coupons, and giveaways will be offered for participation in safety drills and app-related activities.

MULTI-CHANNEL MARKETING & AWARENESS:

ActuateUMICH's rollout will be promoted through multiple communication channels to maximize visibility:

- **Email & Official Announcements:** The University of Michigan's Office of Public Safety will send an email to students and faculty, explaining the app's role in campus security and providing installation instructions.
- **Social Media Engagement:** ActuateUMICH will be actively promoted on Instagram, Twitter, TikTok, and Facebook, featuring short tutorial videos, testimonials from early adopters and campus security officials, interactive Q&As, and live demonstrations.
- **University Website & Email Outreach:** A dedicated webpage will provide step-by-step guides, FAQs, and troubleshooting tips, while email newsletters will highlight updates and success stories.
- **Traditional Media & Print Marketing:** Flyers, posters, and QR code links will be placed in dorms, libraries, dining halls, and student centers, while articles in campus newspapers will explain the app's impact.
- **Event-Based Promotion:** ActuateUMICH will be featured on sports billboards and at major U-M events to emphasize the university's commitment to safety.
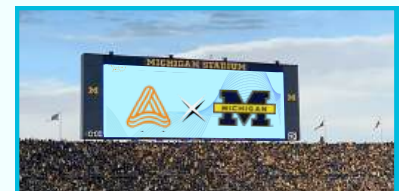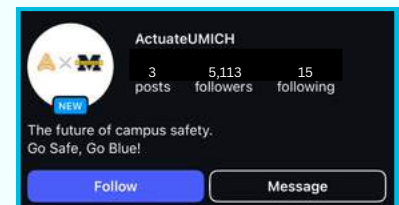
By combining these strategies, ActuateUMICH will ensure strong student engagement, successful adoption, and a lasting impact on campus safety.
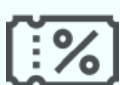
KEY PERFORMANCE INDICATORS:

- Achieve 90% of the U-M student body installing the app on their mobile device within the first year.
- Improve average campus security response rates by at least 40% after six years.
- Lower campus crime rates (e.g., theft, assaults) by 15%+ within the first year.
- Decrease security and safety related expenditures in first fiscal year by 3%+ ($900k+).
- Have ZERO instances of data leaks, extended cybersecurity issues, or other privacy infractions across six years.

KEY METRICS:

1. **App Downloads:** During implementation, the total number and frequency of student downloads will be monitored to gauge the effectiveness of our integration strategies and progress towards our goal of 90% U-M student adoption. If app downloads decline or we fail to meet our specific goal, we will reassess our student marketing and outreach strategies to get back on track and achieve our objectives.

2. **Security Response Times:** Security response times to incidents on campus will be recorded, and then will be sampled at the end of each fiscal year. The averages of these samples will be compared to previous years to assess the app's impact on improving campus security response times.

3. **Number of Security Incidents & Crime:** All security incidents will be logged in a database to track trends and identify areas for improving campus safety and crime response in particular.

4. **Security Costs:** We'll track total annual security costs and break them down by category to assess how ActuateAI contributes to cost savings while maintaining strong security standards.

5. **Privacy Infractions:** Reported data breaches involving students or administration will be recorded to evaluate how well we're protecting digital identities and campus safety. In the event of a privacy breach, a dedicated team at Actuate AI is on standby to resolve the issue in a timely manner and ensure that it is properly and fully addressed.

By consistently using these performance indicators and metrics to track the achievement of our objectives, ActuateUMICH may be continuously refined and improved, ensuring it remains an effective tool for campus security at U-M.

VI. PROPOSED BUDGET

PROPOSED BUDGET (6 YEARS) - A.C.T.U.A.T.E.

A App Development	**C** Campus Integration	**T** Testing & Trials	**U** Updates	**A** Annual Maintenance	**T** Taxes & Fees	**E** Expenditure Total (6 Years)
$925,000	$275,000	$750,000	$50,000 per year	$50,000 per year	$200,000	$2,750,000

Investment: **$2.75 Million**

Projected ROI: **$4.1 Million**

Projected Effect: **Avg. 21% Fewer Crimes Annually**

A App Development Breakdown ($925,000)

- **Design & Prototyping** – **$75,000** (UI/UX, wireframes, testing)
- **Core Development** – **$450,000** (Frontend, backend, AI, database)
- **Security & Compliance** – **$125,000** (Encryption, authentication, regulations)
- **Cloud & Maintenance** – **$150,000** (Servers, updates, monitoring)
- **AI Training** – **$125,000** (Optimization for real-time alerts)

C Campus Integration Breakdown ($275,000)

- **System Integration** – **$100K** (Linking with existing infrastructure & data)
- **Security Training** – **$75K** (Educating personnel on system use)
- **Student Outreach** – **$50K** (Marketing & awareness campaigns)
- **Deployment & Setup** – **$50K** (Onboarding, initial troubleshooting)

Testing & Trials Breakdown ($750,000)

- **Prototype Validation – $250,000** (Accuracy in real-world threat detection)
- **Security Drills & Simulations – $200,000** (Emergency scenario tests)
- **App Beta Testing – $150,000** (Refining functionality via feedback)
- **AI Integration Testing – $150,000** (Testing AI compatibility)

Updates Breakdown ($50,000 annually)

- **AI Enhancements – $20,000** (Ensuring best possible AI performance)
- **Software Updates – $15,000** (Bug fixes and general app updates)
- **Data Monitoring – $10,000** (Refining AI based on security data)
- **User Feedback – $5,000** (Adjustments based on student & faculty input)

Annual Maintenance Breakdown ($50,000 annually)

- **Server Upkeep – $20,000** (Ensuring reliability and storage)
- **Security Maintenance – $15,000** (Preventing cyber threats)
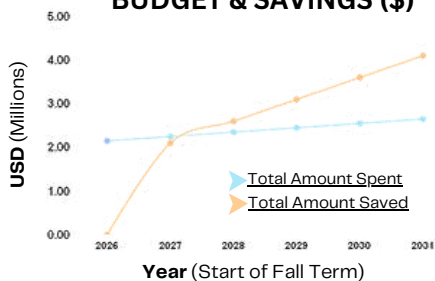- **Hardware Maintenance – $15,000** (Repairs and upgrades)

Taxes & Fees Breakdown ($200,000)

- **Regulatory Compliance – $80,000** (Meeting legal and security standards)
- **Operational Fees – $50,000** (Licensing, permits, and admin costs)
- **Estimated Taxes – $50,000** (Local, state, and federal taxes)
- **Data Security Compliance – $20,000** (Ensuring privacy and encryption)

Expenditure Total Breakdown (6 Years, $2.75 Million)

- **App Development – $925,000**
- **Campus Integration – $275,000**
- **Testing & Trials – $750,000**
- **Updates – $300,000**
- **Annual Maintenance – $300,000**
- **Taxes & Fees – $200,000**

### BUDGET & SAVINGS ($)

USD (Millions) vs Year (Start of Fall Term)
- Total Amount Spent
- Total Amount Saved

RETURN ON INVESTMENT

Investing in ActuateUMICH offers a strong financial return for the University of Michigan. With a $2.75 million total investment over five years, our team projects **$4.1 million in savings (± $0.268 million, 95% Confidence Interval – based on 750 simulated trials)** by reducing costs in crime response, security personnel, legal liabilities, and general operations. While annual savings may vary, the university spends over $30 million per year in these areas. Backed by ActuateAI's proven capabilities, ActuateUMICH is expected to deliver a **150% return on investment**, making it both a financially and strategically sound security enhancement.

BUDGET & CRIME (%)

Percent Change vs Year (Start of Fall Term)
- % of Budget Increase
- % of Crime Decrease
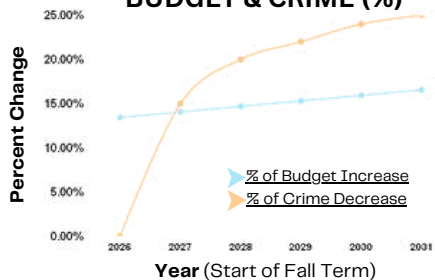
Implementing ActuateUMICH is a strategic investment as it offers a significant reduction in crime rates on top of its expected potential for financial return. Our team projects a **21% average annual crime reduction over five years**, reaching 25% by year five, all for a modest **15% average annual budget increase**—a worthwhile tradeoff given the university's security budget that already sits at $16 million per fiscal year.

This reduction comes from ActuateUMICH's AI-powered surveillance, real-time alerts, and automated emergency response, enabling faster intervention, better resource allocation, and stronger crime deterrence. Even disregarding the projected financial savings, the potential for a safer campus makes **ActuateUMICH a necessary step toward enhanced security and safety at the University of Michigan.**

VII. BIBLIOGRAPHY

Actuate AI Case Study, aws.amazon.com/solutions/case-studies/actuate-ai/. Accessed 7 Feb. 2025.

Actuate Company Profile: Valuation & Investors | Pitchbook, pitchbook.com/profiles/company/264437-56. Accessed 7 Feb. 2025.

"AI Camera Software: Reduce False Positives by 95%+: Actuate." Actuate AI, 12 Nov. 2024, actuate.ai/.

"Ai Index: State of AI in 13 Charts." Stanford HAI, hai.stanford.edu/news/ai-index-state-ai-13-charts. Accessed 7 Feb. 2025.

"Carrying U-M's Academic Vision into the Future." Office of the Provost, provost.umich.edu/. Accessed 7 Feb. 2025.

"Home Page." Business of Apps, 13 May 2020, www.businessofapps.com/.

"Home." Division of Public Safety & Security, www.dpss.umich.edu/. Accessed 7 Feb. 2025.

"How Much Does It Cost to Make an App?" Appinventiv, 4 Feb. 2025, appinventiv.com/guide/mobile-app-development-cost/.

School Shootings by Country 2024, worldpopulationreview.com/country-rankings/school-shootings-by-country. Accessed 7 Feb. 2025.

"Tracking Mass Shootings in Michigan." Michigan Public, www.michiganpublic.org/public-safety/tracking-mass-shootings-in-michigan. Accessed 7 Feb. 2025.

Tuan, Joe. "App Development Costs 2025: The Complete Breakdown." Topflight, 14 Jan. 2025, topflightapps.com/ideas/app-development-costs.