SAAID

Saudi Arabian Artificial Intelligence Driving

SAAID: THE SAUDI ARABIAN ARTIFICIAL INTELLIGENCE DRIVING INITIATIVE ENGINEERING TRUST, COMPETENCE, AND SAFETY FOR SAUDI VISION 2030.

AUTHORS
Author: Fahad Adel Alghamdi
Supervisor: Mubashar

AFFILIATION
SDAIA Academy
Saudi Data and AI Authority

INTRODUCTION

Road safety is a critical national challenge where traditional methods fail to meet Vision 2030 mandates. The Saudi Arabian AI Driving (SAAID) initiative is the decisive strategic response, establishing a smart ecosystem fully reliant on Artificial Intelligence (AI). SAAID utilizes Deep Learning and Computer Vision across a three-stage qualification protocol (Theoretical, On-Track, and Real-World Driving). The Strategic Goal is to guarantee absolute objectivity in assessment and graduate highly competent drivers, directly supporting Vision 2030 by reducing road fatalities to 5 per 100,000 population and creating modern jobs to lower unemployment.

OBJECTIVE

- Absolute Competence 💯: Ensure drivers graduate with a minimum competency of 85% via a sovereign, automated, and incorruptible assessment.
- Vision 2030 Safety 🛡️: Contribute to reducing road fatalities to 5 per 100K by decreasing driver hazard response time by 44%.
- Integrity System 🔒: Achieve full transparency by eliminating human interference and automatically and securely transferring success data to the Absher platform.
- Localization & Economy 💼: Create high-value technical career pathways (AI) to support the reduction of national unemployment.

Technologies

PyTorch

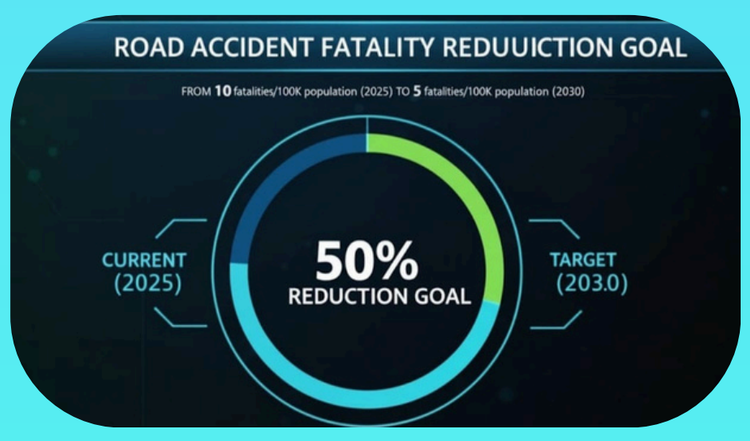
H-ROS Hardware Robot Operating System

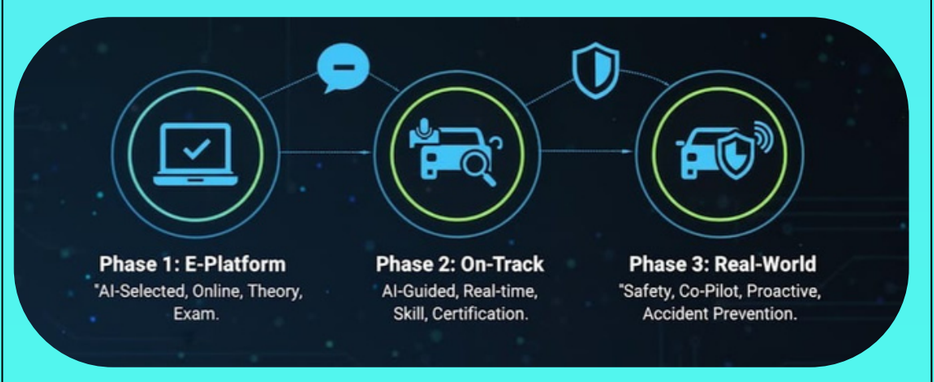
YOLOv8

OpenCV

METHODOLOGY

1. Theoretical AI Assessment (TASA) 💻
   - The digital gateway where AI dynamically curates a challenging 100-question adaptive exam to ensure deep comprehension; a minimum 85% passing score is mandatory.
2. On-Track Virtual Instructor (OAI) ⚙️
   - The vehicle becomes an automated instructor, using High-Precision GPS (RTK) to compare the trainee's path against the ideal trajectory, evaluating deviations in centimeters.
3. Real-World Safety Co-Pilot (RAS) 🚨
   - The system acts as a proactive safety valve, continuously assessing risk, autonomously intervening (AEB) to prevent accidents, and securely transferring the 85% success data to "Absher."





RESULTS/FINDINGS

Comparative simulation proved SAAID's superiority, significantly reducing driver risk response time by 44% (to 420 ms) and boosting the Safety Compliance Score to 96%. This led to a 95% first-attempt success rate, supported by the AI's guarantee of an 85% minimum competency in every phase. These results directly support Vision 2030's 5 per 100K fatality goal, creating new technical jobs, and localizing Autonomous Driving technology (LiDAR/RADAR).

ANALYISIS

Sovereign Strategic Impact:
- Economic Engine: Transforms the training sector into a high-tech industry, driving investment.
- Talent & Jobs: Actively creates new, essential roles (AI Engineers, Data Processors), reducing unemployment.
- AV Foundation: SAAID's sensor fusion provides a local, successful proving ground for national Autonomous Vehicle deployment.

CONCLUSION

The Future is Certified: SAAID guarantees demonstrably competent drivers, fulfilling a national safety mandate and establishing the Kingdom as a global pioneer in AI Governance and Smart Mobility.

NEXT STEPS:
1. Global Adaptation (Exporting the model to international markets).
2. Heavy Vehicle Scaling (Extending AI assessment to trucks and buses).
3. Accessibility Focus (Ensuring high program inclusivity for all users).

رؤية VISION 2030 المملكة العربية السعودية KINGDOM OF SAUDI ARABIA