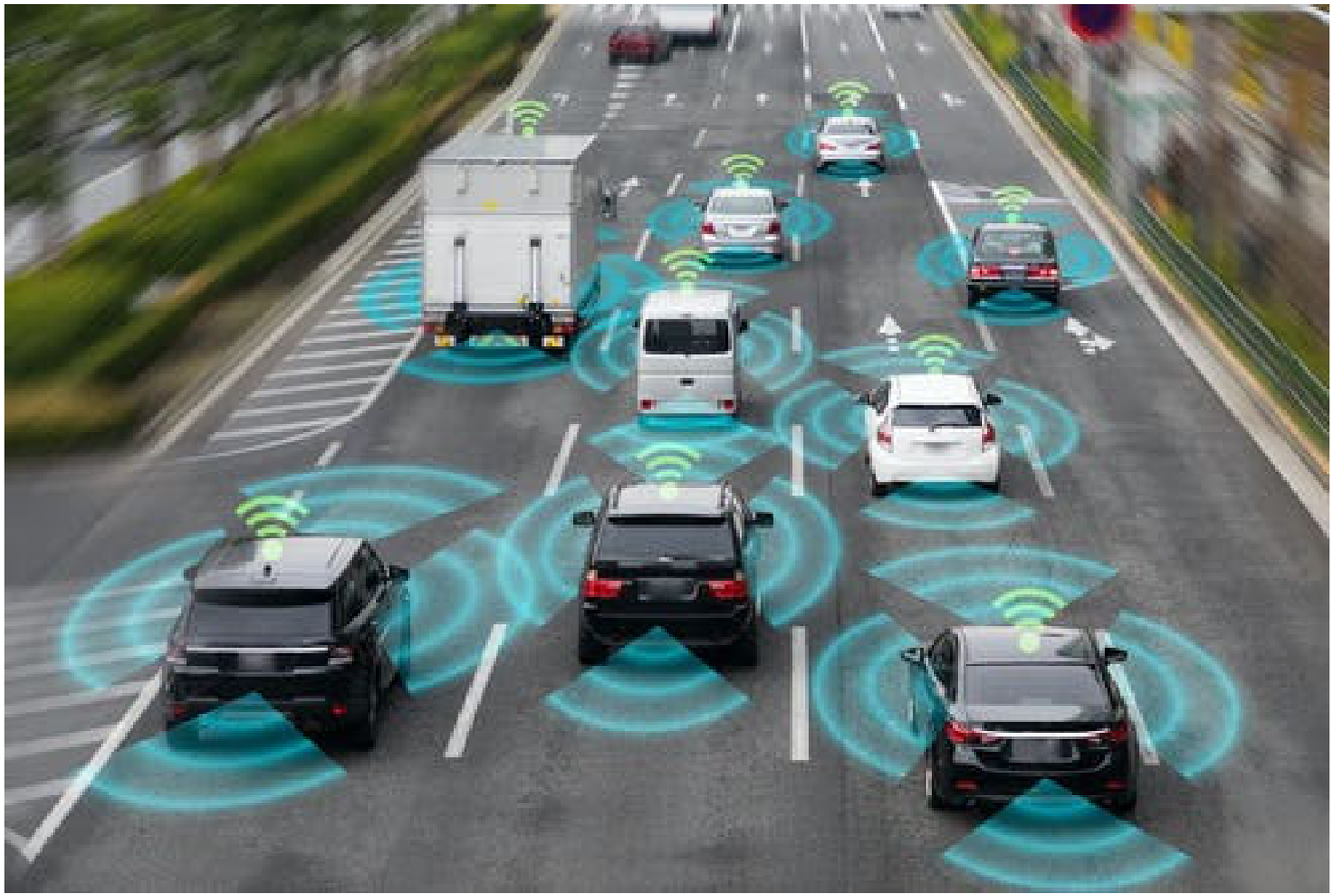
Opportunities and Challenges in Autonomous Driving (L4)

Huei Peng

Director, Mcity

The Potential: Safer, Greener, More Equitable

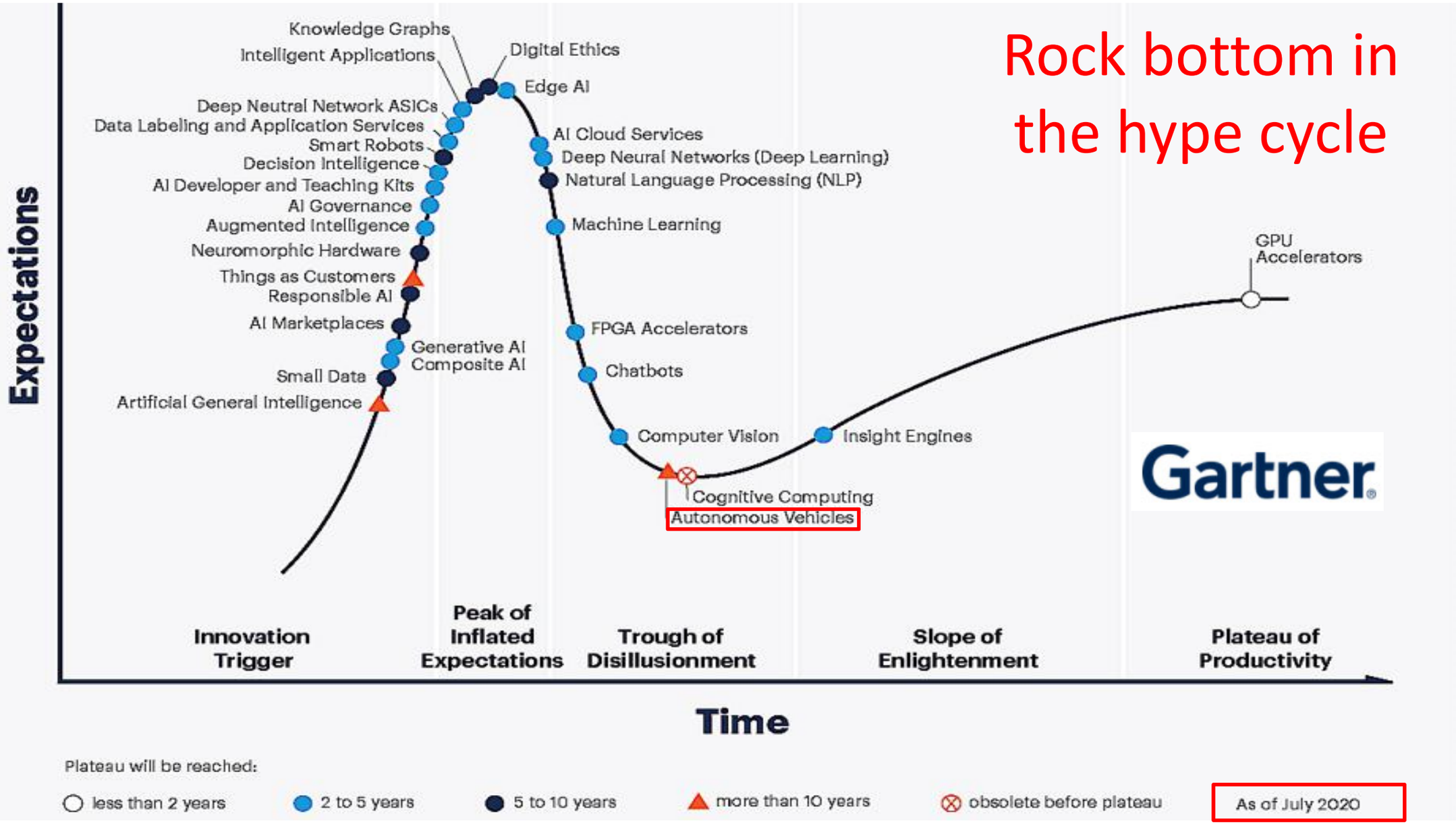


The societal-level opportunities remain true but unrealized

Current Status and Challenges

- Rock bottom in the “hype cycle”
- Consolidation in the industry
- Cost—improving very quickly
- Public trust remains low
- Reliable perception and performance

Rock bottom in the hype cycle



Consolidation in the Industry

Waymo to lose its CFO and head of automotive partnerships

UBER → Aurora

lyft → woven planet

APTIV → Motional

Cruise plans to start making autonomous Origin shuttle in 2023

Kalea Hall The Detroit News

Published 5:49 p.m. ET May 13, 2021 | **Updated 5:50 p.m. ET May 13, 2021**

GM CEO Mary Barra wants to sell personal autonomous vehicles using Cruise's self-driving tech by 2030

Toyota-backed startup Pony.ai raises $267 million in latest fundraising

Top Challenge: Cost Reduction

- Lidars, RTK, GPU, HD map, data/label/training
- Identify the right ODD for early deployments







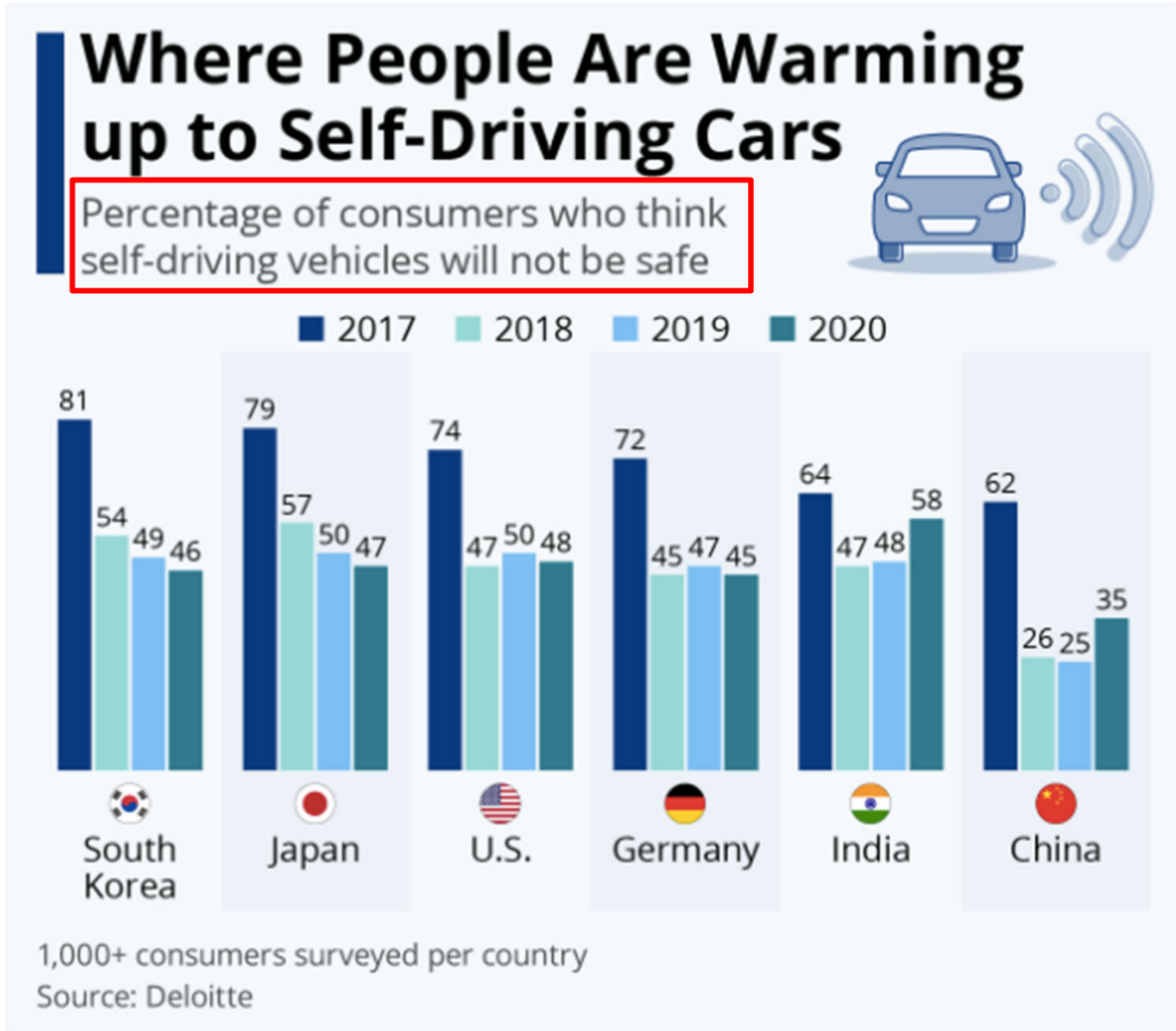


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Opportunities for R&D

- Public trust
  - V&V, simulations, AR
- Reliable perception and performance
  - For both on-vehicle and infrastructure sensors

Many Do Not Think AVs Are Safe



AVs Still Have Challenges—ODD Needed









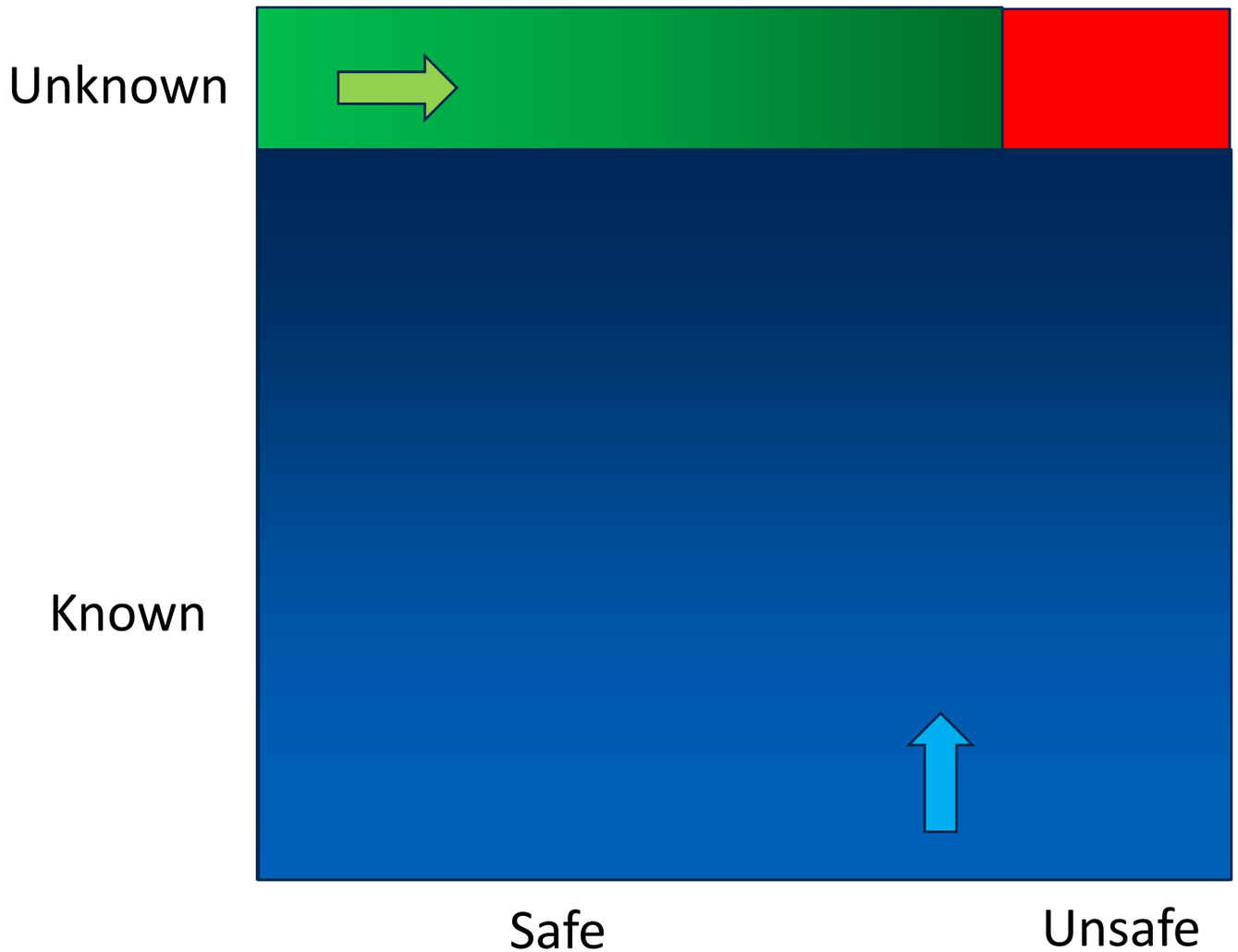
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ODD Examples

- Geo-fenced areas
- Speed limited
- Weather limited
- Areas with proper infrastructure support

We should stop talking about Level 5
Instead, L4 with a larger and larger ODD

Design vs. V&V



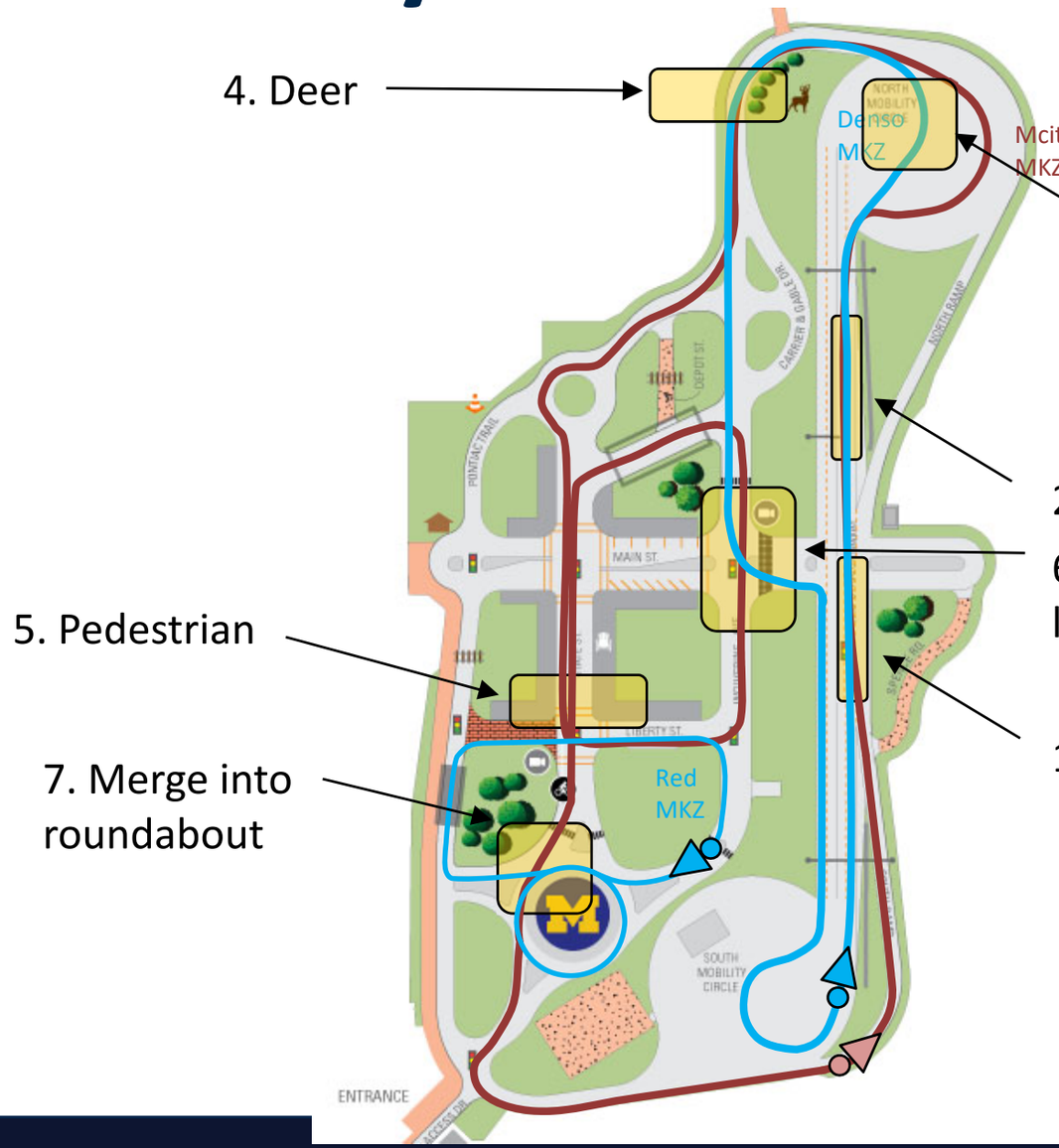
Independent and transparent V&Vs are important for winning public trust

7 Scenarios for the Mcity ABC Demo











JUN
17

Mcity ABC Test: A Concept for Assuring Automated Vehicle Safety

by University of Michigan Mcity Follow

Free

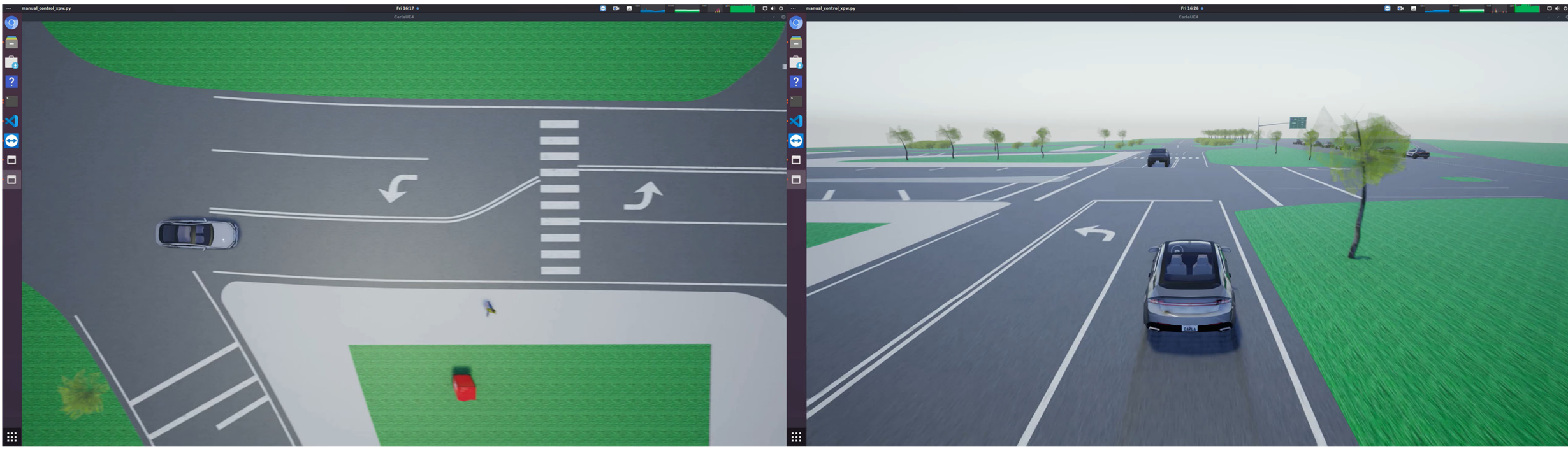
Register

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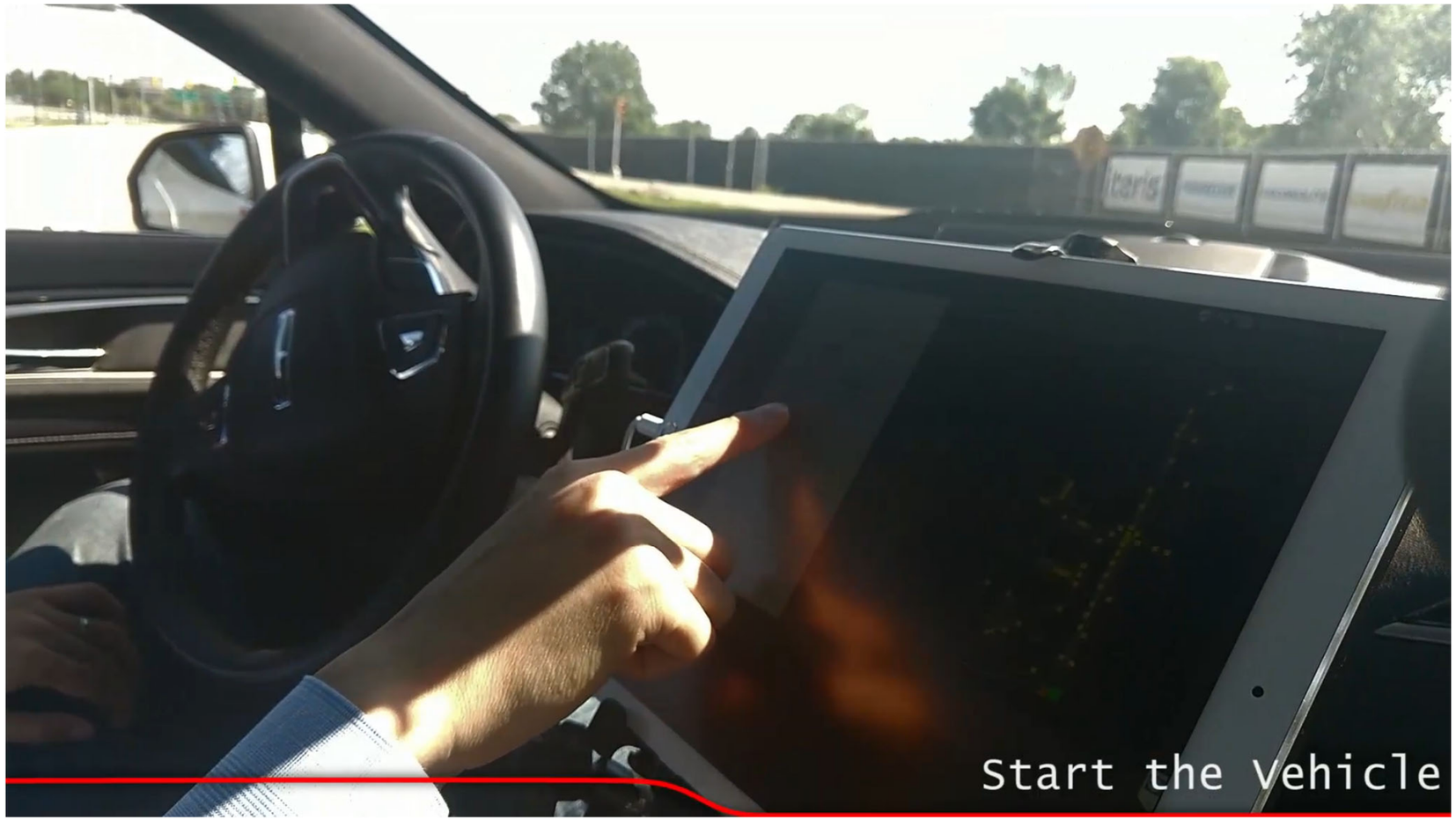
Simulations—Safer, Cheaper and Faster

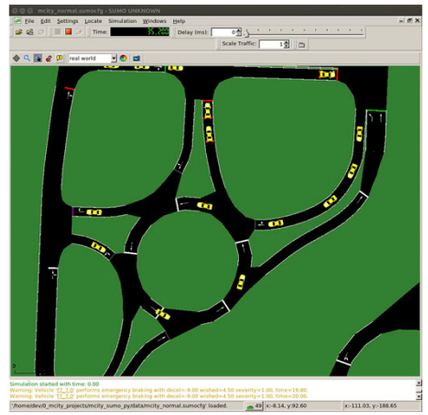


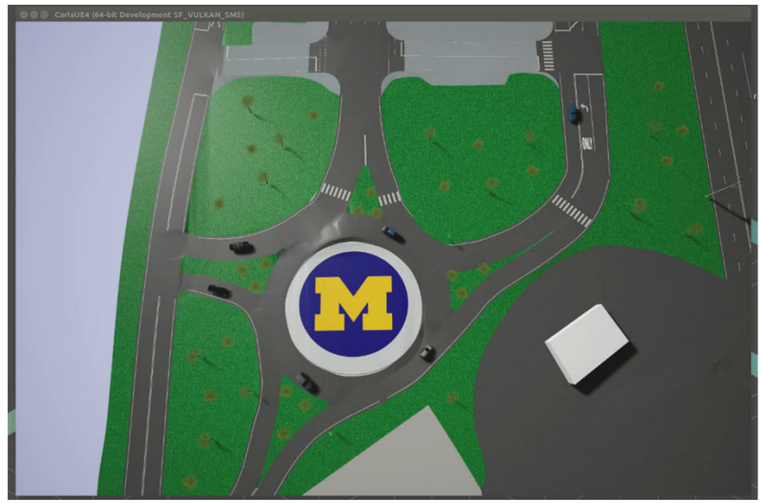
Simulations ⟶ Lab Testing ⟶ Public Roads



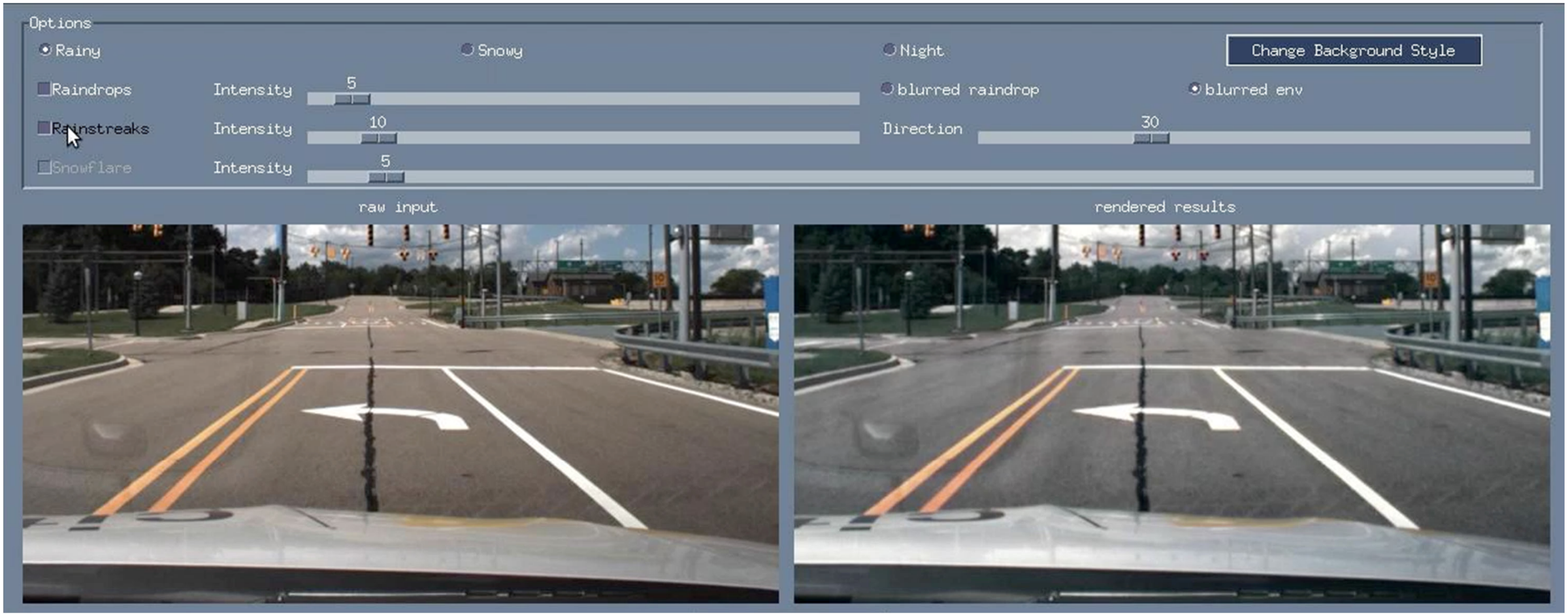
Augmented Reality--Traffic



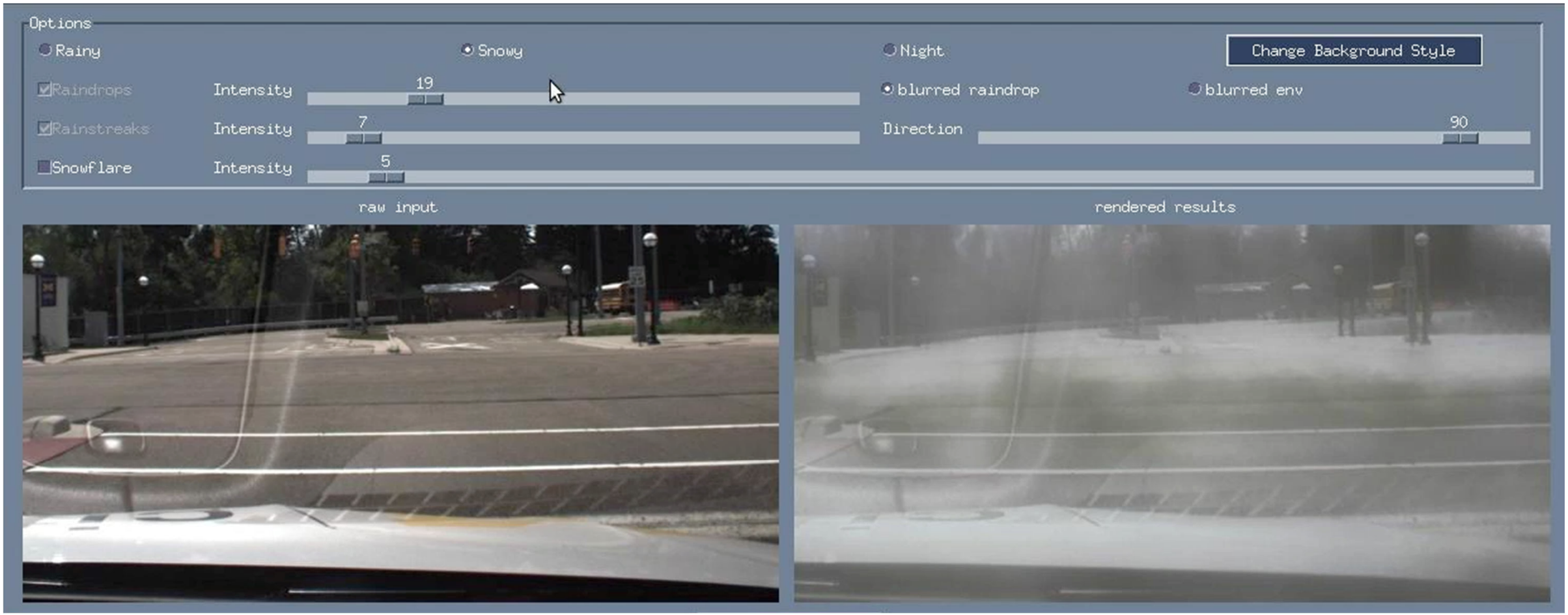




Augmented Reality--Rain



Augmented Reality--Snow



Robust Perception—Need Better Labels

