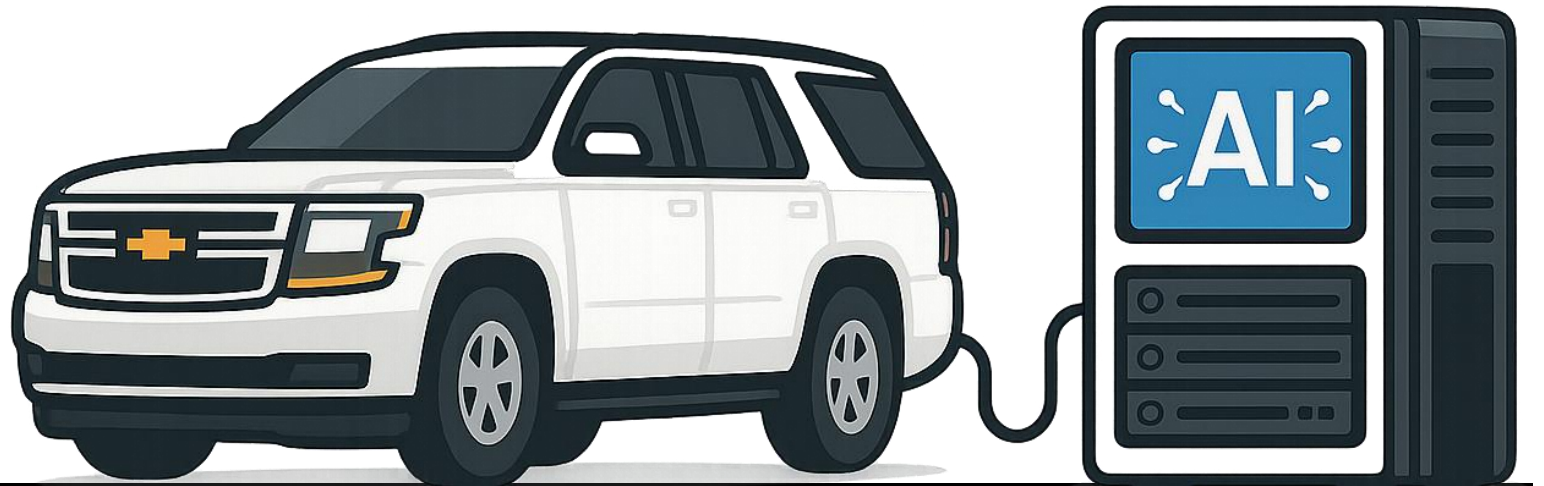

Wasted Momentum:

A Study of Vehicle-Powered Edge AI

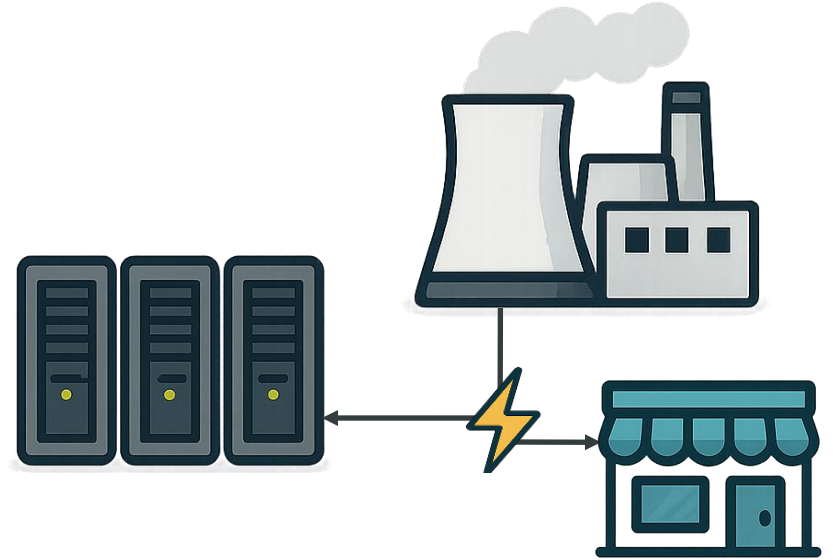
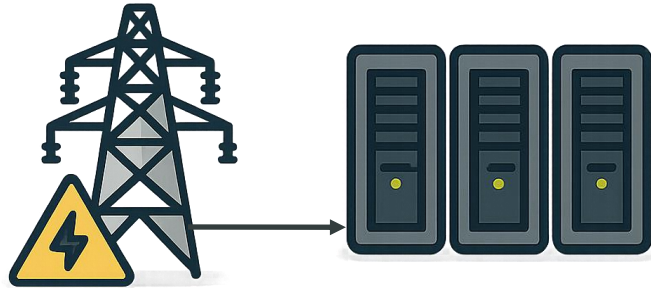
Jacob Willson
SUNY Polytechnic Institute



The Problem

Data centers are running on fumes

"Global AI Energy Crisis: Increasing 415 TWh → 945 TWh by 2030" (IEA, 2025)

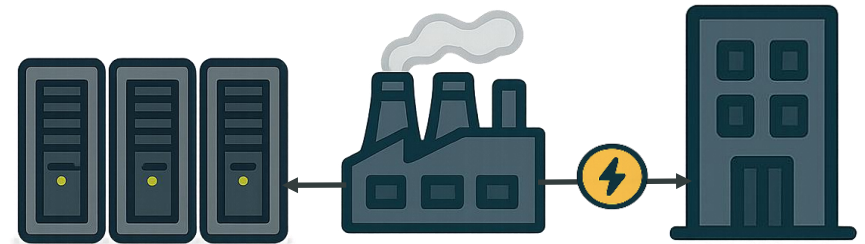


We need to shift gears

"U.S. data centers projected to more than triple power consumption by 2030" (McKinsey & Co, 2025)

The intersection of energy and AI

"Slow supply responses will create steep cost increases that will hurt consumers and businesses" (IMF, 2025)



The Solution

Vehicle Powered Edge AI

- Capture gas/diesel engine-generated electricity for running AI compute
- Leverage existing infrastructure vs. building new data centers
- Most of current capacity goes unused



The Power Source

280M+ gas/diesel vehicles on U.S. roads each generate 500-1400W of unused electrical capacity while running that currently dissipates as heat.



Headlights ~50W

vs

Jetson Nano 25W



Audio System ~400W

vs

DGX Spark 240W

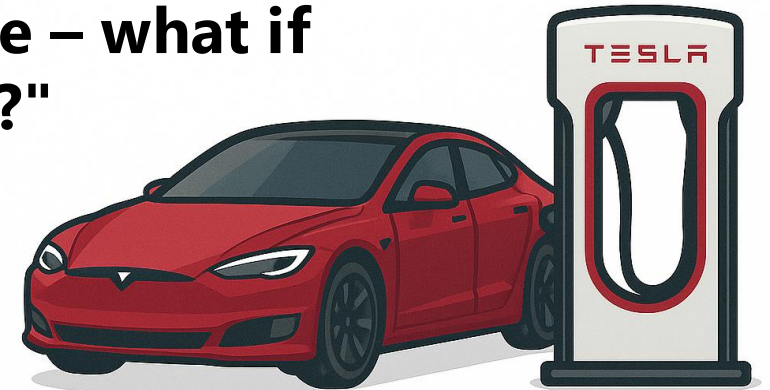


The Industry

- **Automotive Edge AI - \$18B market, 24% annual growth to 2030**
- **92% of Industry leaders view Auto Edge AI as essential**
McKinsey & Company, August 2025

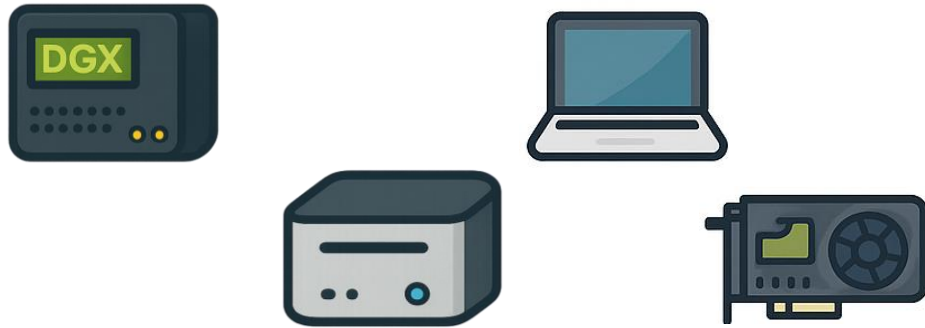


"Cars sit idle 95% of the time – what if they could compute instead?"
Tesla, Q3 2025 Earnings Call

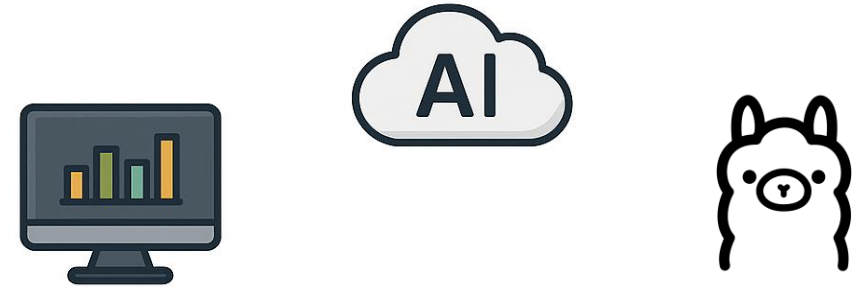


The Research

Hardware



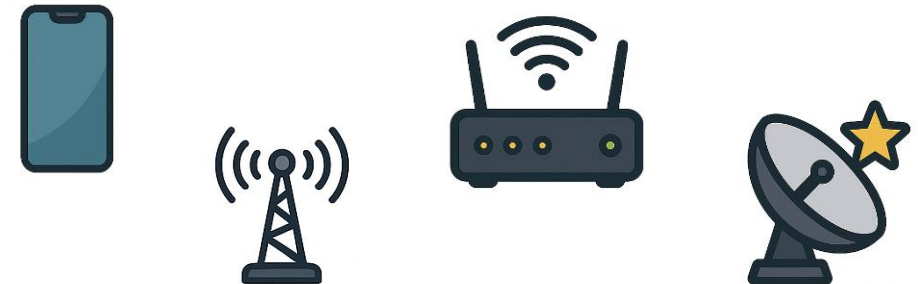
Software



Power Supply



Networking



The Prototypes

- Every commute becomes compute
- AI network distributed between 2 vehicles
- Turns wasted vehicle electricity into AI research



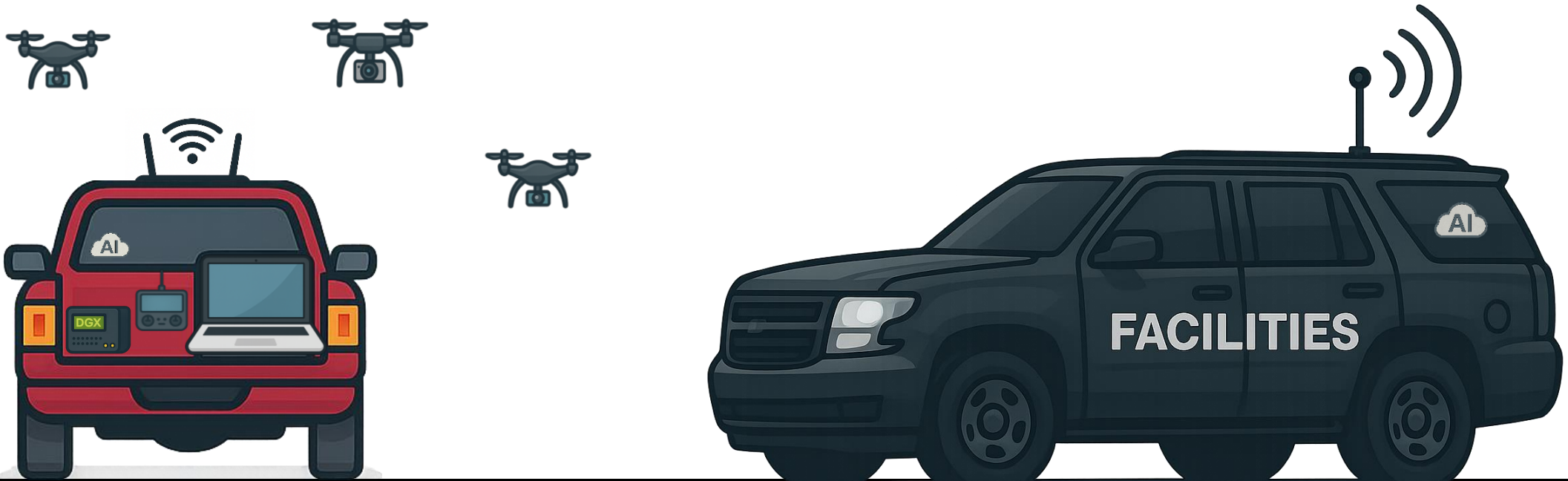
The Commercial Viability

- Sustainable distributed AI infrastructure at industrial scale
- Distributed compute-as-a-service potential
- 2-vehicle pilot to 200+ deployment



The Future Customer

- Campus vehicles, commercial and field deployments
- Commercial delivery, rideshare and logistics fleets



The Deliverables



**System Documentation
Replication Protocols**



**SBIR Proposal
FASST Frontiers in AI
ARPA-E**



**Research Findings
Energy Benchmarks**



**SBIR Proposal
AI-EDGE**



**Campus Use Case Study
Economic Viability Model
Partnership Documents**



**NYSEERDA
NYS Innovation VC Fund**