

Lesson 22 — AI Tank: 48-Hour Autonomous Armor Hackathon

Hackathon brief · Elon themed

Draft — not yet published

The challenge

Build a fully autonomous tank. Not RC. Not "autonomous with a human watching the video feed." The tank drives itself, finds its own targets, and engages — in 48 hours, from first principles.

The platform

- 1/10-scale RC tank chassis: treads, turret with 2-axis servo, laser-tag emitter.
- Compute: **one Jetson-class board**. That's it. No cloud, no laptop in the loop.
- Sensors: your choice — but every sensor must justify its existence (see Rule 1).

The course

- Outdoor lot, roughly 50×30 m. Obstacles: barriers, ramps, "urban" blocks.
- 5 targets: **3 hostile (red)**, **2 friendly (blue)**. Hit a friendly and you're done — negative points and public shame.
- 10-minute run limit. Zero human input after the start beep.

The rules

1. **The best part is no part.** Every component defends its existence in the design review. Simplicity is scored.
2. **Vision-first.** LiDAR is allowed but costs simplicity points. Cameras + IMU is the reference design.
3. **No human in the loop.** Touch the controls during a run = disqualification.
4. **Safety is not a part you can delete.** Hardware kill switch, geofence, and a human holding a big red button. Non-negotiable.
5. **48 hours is aspirational, and we're doing it anyway.** Sleep is a part you may delete at your own risk.

Scoring (100 pts)

- **Course completion:** 25 (time bonus up to +10)
- **Target ID accuracy:** 25 — hostile vs. friendly. False positive on a friendly: -15 each.
- **Hits on hostile targets:** 25
- **Simplicity:** 15 — fewest *justified* parts wins
- **Style:** 10 — crowd vote. "Coolest engagement" is a real category.

Judging

Design review (defend every part) + live runs + telemetry logs. *"If you can't explain it simply, you don't understand it"* — you get 5 minutes to explain your stack to the judges.

Reference solution architecture: see [lesson-22-ai-tank-architecture.html](#).