

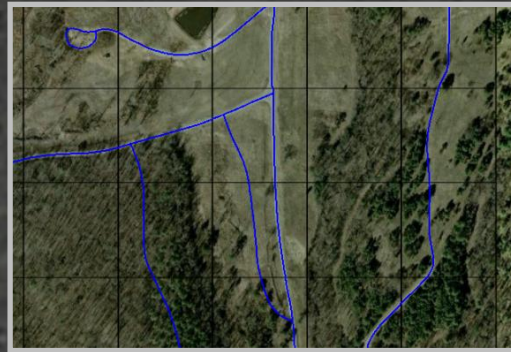


Oshkosh TerraMax

Road extraction for autonomous unmanned ground vehicles



TerraMax autonomous unmanned ground vehicle



Zoomed view of extracted roads



Extracted roads in Fort Pickett

TerraMax Background

- Oshkosh TerraMax fully-autonomous unmanned ground vehicle (AUGV)
- One of five competitors to complete the 132-mile desert course at the 2005 DARPA grand challenge.
- At 2007 DARPA urban challenge, demonstrated merging, intersection precedence and route planning.
- Demonstrated on Marine Corps (MTVR) and Army (PLS) vehicles.

Road Extraction

- Autonomous system requires high-res, accurate road network and metadata.
- Primordial contracted to extract quality data from aerial imagery and other sources, and to develop conversion tool.
- Experimented with using Ooze for 19.5 km² region in Fort Pickett.
- 1420 tiles; resolution: 0.3 m/pixel.
- 3 Ooze workers; 1 QA subtask per tile.
- Intranet deployment.

Results

- Time: 6.17 min / person / km²
- In addition to Ooze internal QA, quality assessed in 3rd party GIS tool with random sampling.
- Extracted all visible roads in 98% (+/-10, 90% conf) of tiles within test sample.
- For TerraMax, post-processing to remove imperfections is currently required, using Global Mapper or other GIS tools.