



Off-road Vehicle Autonomous Navigation

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This talk is related to the implementation of a vehicle Autonomous Navigation in a really unstructured and harsh environment... Planet Mars.

The basic principles are the same: the vehicle needs to go from A to B, relying on its own sensors to detect hazards and find the safest route.

However there are several differences with respect to terrestrial applications:

- Strong Energy limitation (fuel: solar power), forcing the use of passive sensors and low power consumption actuators
- Extreme temperature environment, outside terrestrial and even military operational ranges
- Radiation Tolerance, causing the use of low miniaturization, fan-less and robust avionics with limited computational power
- Incredibly high reliability: a permanent failure is not recoverable by human intervention (mission loss)
- Lack of a GPS System and m-scale knowledge of the target area

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