NVIDIA JETSON TX1

**PROJECT**: Autonomous drone for detecting increased temperatures among the components in industries and lubricating them.

**How is it useful?**

Frictional heat is generated among various machines used in an industry. Many a times it is hard to figure out the heat generated by friction and this unwanted heat leads to mechanical failure and many further complications causing huge loses. We can use the thermal camera present in the Jetson which can determine the increased temperature levels and lubrication can be done accordingly.

**Features of the NVIDIA Jetson TX1 and how to harness it**

Jetson has a 256 core Maxwell architecture GPU which can be put into use.

The Jetson supports USB 3.0+USB 2.0 ports through which two cameras i.e. a normal one and a thermal camera can be used.

Normal camera can include a Sony ICX424 which can be configured to a USB 3.0 port.

Sony ICX424 is a color camera which gives 648\*488 resolution.

We can use a Lepton (3.0) IR camera for thermal imaging. a lepton camera has a large pixel depth(14bit) which can sense the slightest change in temperature. the only disadvantage of the Lepton is that it has a very small pixel range (60\*80).

Both the cameras work together i.e. through the I.R. camera the part is to identify the part were the heat is more and with the help of the normal camera that part can be identified in the real world and can be lubricated.

The amount of lubricant released is controlled by an Arduino board i.e. it depends on the excess temperature it has risen.

The communication between the Jetson (CPU) and the Arduino board will be based on i2c protocol.

The drone will be powered by a LiPo battery as they can withstand high temperatures and are more durable.