**Introduction**

**What it is about?**

“The **Big Dig ceiling collapse** occurred on July 10, 2006, when a concrete ceiling panel weighing 3 tons (2722 kg) and measuring 20 by 40 ft (6.1 by 12.2 m) fell in Boston's [Fort Point Channel](http://en.wikipedia.org/wiki/Fort_Point_Channel) Tunnel. The panel fell on a car traveling on the two-lane ramp connecting northbound I-93 to eastbound I-90 in [South Boston](http://en.wikipedia.org/wiki/South_Boston), killing a passenger and injuring the driver. The collapse caused a section of the tunnel to be closed for almost a full year.” - wikipedia

The tunnel ceiling tiles have to be regularly inspected for structural integrity.

**Solution?**

Create an automated inspection system comprising of a robot carrying sensors and processing capabilities needed to carry out the inspection, a ceiling track system to facilitate the robot’s movement, a power distribution system, and a central droid command server.

The robot will carry a “thumper” to generate seismic waves in the concrete slabs, and single axis inertial sensors it will extend out to numerous points on the slab.

The robot will move along a chairlift like cable system mounted to the ceiling. Each row that runs the length of the tunnel will have a cable stretched from end to end.

The cable system will also be the power distribution system, or maybe the robot will have batteries or supercapacitors

The robot will communicate to a central droid command server and provide test results and current location.

**Why are we doing this?**

reduce inspection cost

remove need to close down tunnel for inspections

**Why is this a good capstone project?**

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**Background**

What research like this has been done before?

What skills do we need to have or gain to complete the project?

**Procedure**

tasks and substasks identified to achieve end goal?

materials & equipment needed?

which professional contacts need to be made?

what data is needed & how will it be collected?

what methods or processes will be used to analyze data & where else have these

methods been used?

time schedule for completing tasks? [PERT](http://en.wikipedia.org/wiki/Program_Evaluation_and_Review_Technique)

task assignments?

**Cost**

prototype

production unit