

<p>PROBLEM</p> <ol style="list-style-type: none"> 1. Limited resources (funds and human labor): pose the need to prioritize repair and maintenance. 2. Irregularity: The form of the crack is irregular, which is hard to detect and segment. 3. Traditional methods of pavement crack detection rely on manual inspection by trained personnel, which can be time-consuming and require closing lanes of traffic or shutting down roads, leading to disruption and delays for motorists. 4. Scale: manual inspections cannot cover on a large scale, such as rural and remote areas. 	<p>SOLUTION</p> <ol style="list-style-type: none"> 1. Given limited resources, using an automated inspection system to prioritize which roads to inspect and repair. Prioritization can be based on factors such as the severity of cracks, traffic volume, and safety considerations. 2. Develop a deep-learning-based model for automating the process of recognizing and segmenting the cracks from images, which is scalable and can be easily obtained. 3. Collaboration between industry, government agencies, and research institutions to expand inspection capabilities. 	<p>UNIQUE VALUE PROPOSITION</p> <ol style="list-style-type: none"> 1. The overall inspection time can be greatly shortened with our method compared to the manual inspection method. 2. High accuracy in segmentation results. 3. Avoid impact on the traffic. 4. No impact on the pavement material, with easy-to-get image data. 	<p>UNFAIR ADVANTAGE</p> <ol style="list-style-type: none"> 1. Some state DOTs already have corporate partners. Besides, new companies may lack the credibility and reputation that established vendors have, making it more difficult to gain the trust of DOT decision-makers and demonstrate the value of their products. 2. Some road maintenance companies have some road maintenance records and extensive data acquired in the past years and are unwilling to share them with us. 	<p>CUSTOMER SEGMENTS</p> <p>Divers who are benefit from the pavement maintenance.</p> <p>DOT</p> <p>Road owner</p> <p>Road maintenance service companies</p>
<p>EXISTING ALTERNATIVES</p> <ol style="list-style-type: none"> 1. Manual inspection: Manual inspection involves trained personnel visually examining the pavement surface to identify and record cracks. 2. Infrared thermography: Infrared thermography involves using a thermal camera to detect temperature differences in the pavement surface, which can indicate the presence of cracks or other damage. 3. Ultrasonic testing: Ultrasonic testing involves using high-frequency sound waves to detect cracks and other damage in the pavement structure. 	<p>KEY METRICS</p> <ol style="list-style-type: none"> 1. Accuracy of the crack segmentation (Dice score or mean intersection over union score). 2. Number of road closures (the less, the better), where we expect 0 in the real-life application. 3. Image data acquisition efficiency. 	<p>HIGH-LEVEL CONCEPT</p> <p>The next Google Health in civil infrastructure</p>	<p>CHANNELS</p> <ol style="list-style-type: none"> 1. Industry events: using trade shows or industry conferences to display solutions and network with potential customers who may not be actively seeking out road crack maintenance solutions, but who attend industry events to stay up to date with the latest technology and trends. 2. Partnerships: forming partnerships with government agencies, construction companies involved in road construction. 3. Civil Engineering magazines 	<p>EARLY ADOPTERS</p> <p>Road maintenance service companies</p>
<p>COST STRUCTURE</p> <p>Equipment</p> <p>Data acquisition</p> <p>Data annotation</p> <p>Payroll</p> <p>Cost of Solicitation</p> <p>System Development</p>			<p>REVENUE STREAMS</p> <p>Investment</p> <p>Sell services to road maintenance service companies, DOT.</p> <p>Tax/Toll from drivers</p>	

