IN-LINE DETECTION SYSTEM FOR PITTING CORROSION

AUTOMATION ENGINEERING PROGRAM

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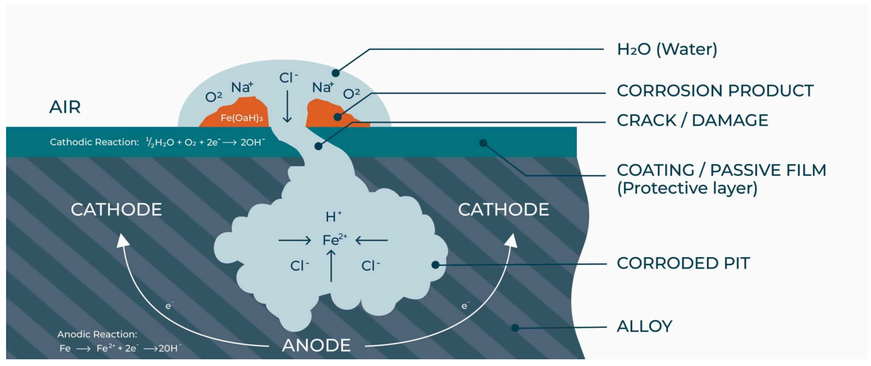
Problem Statement

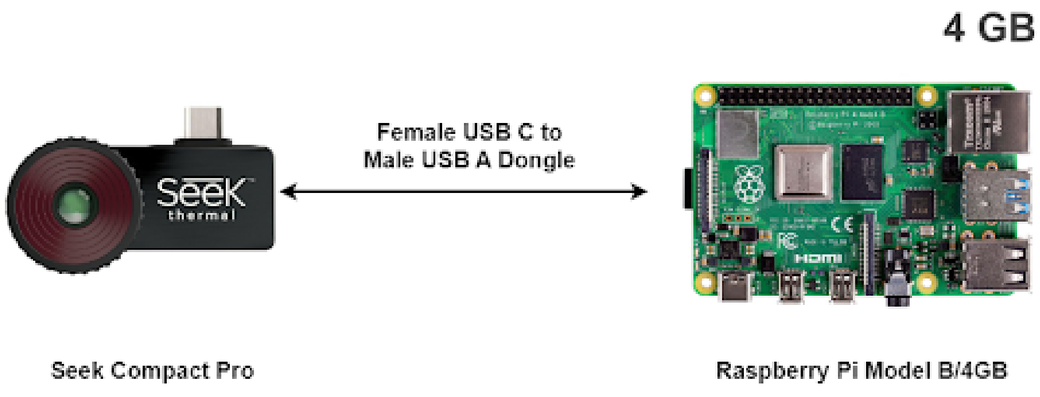
Food industry are using stainless steel SUS304 to contain chemicals. This lead to localized corrosion especially pitting corrosion which could contaminated the product.
This problem can cause significant financial, environmental, and life threatening consequences.



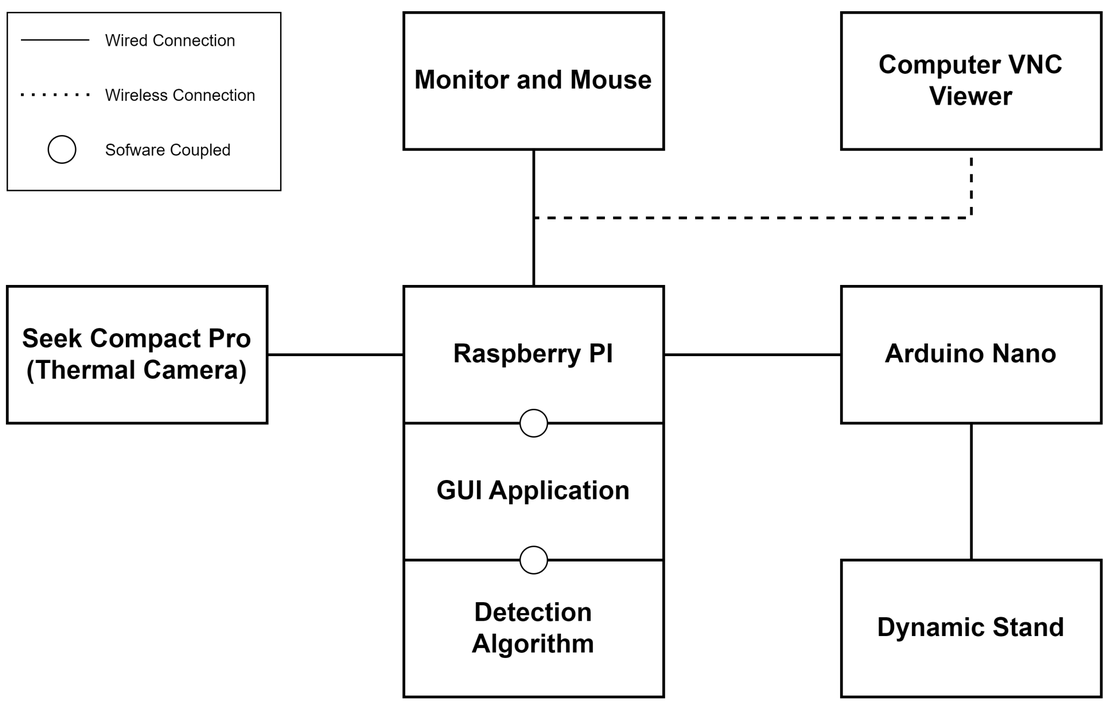
Our Solution

From the stated problem, there is a need to develop with a non-intrusive detector for pitting corrosion.

Our solution is to create a pitting corrosion detection system using infrared thermography combined with MobileNetv2 + SSD. This system is running on Raspberry Pi 4 model B, which is a small single-board computers (SBCs). This system can detect multiple pitting corrosions and calculate the percentage scores of pitting corrosions likelihood.

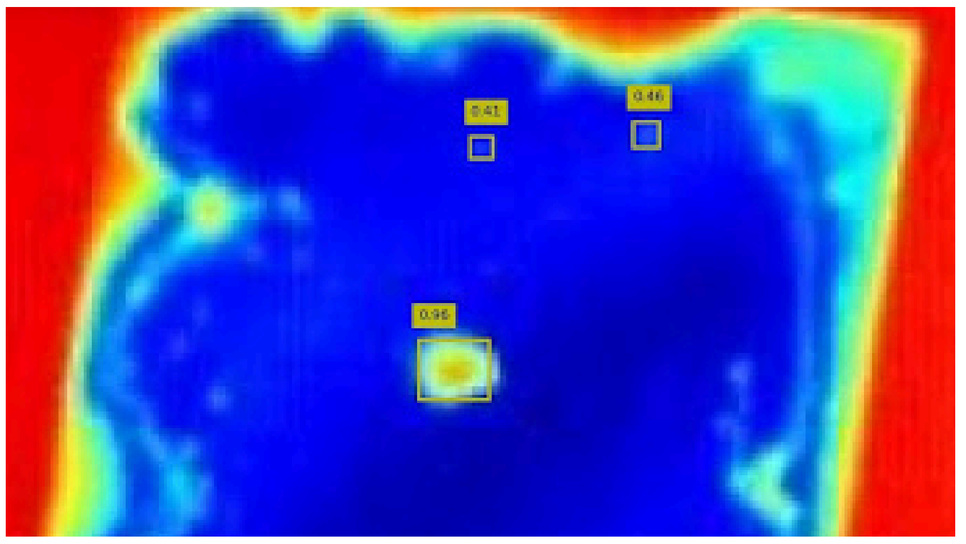


System Architecture

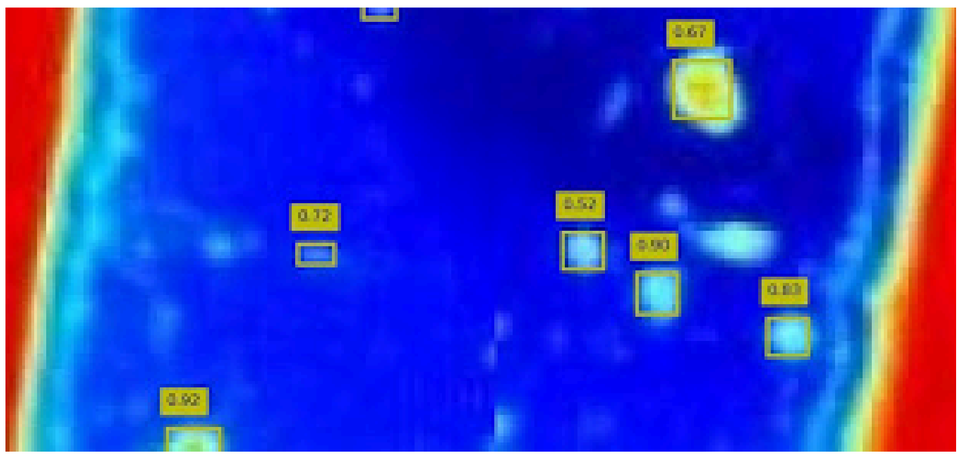


Results

The results from our system is the thermal picture of the specimen that can help detect multiple pitting corrosions with easy to interpret the pictures. The results also come with confident for each location.



Specimen 1



Specimen 2

Conclusion

In conclusion, we successfully created the pitting corrosion system using infrared thermography combine with MobileNetv2 + SSD which is running on Raspberry Pi 4 model B connecting to the monitor and mouse to use the application. The results of detection is good enough to interpret the picture, detecting where the pitting corrosion is.

References

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