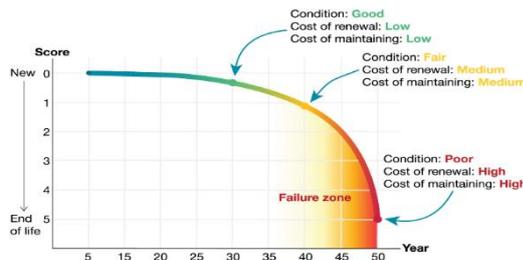


MSc Thesis opportunity at Wetsus

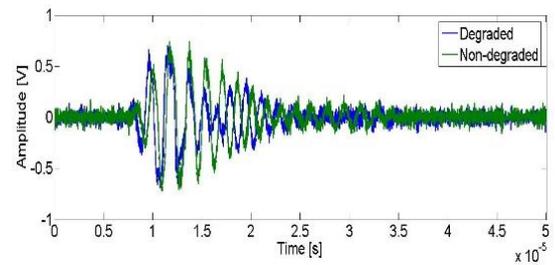
- Are you knowledgeable in computer science (big data, signal processing and programming)?
- Do you like to collaborate with innovative companies to perform cutting-edge research?
- Do you like to develop algorithms and risk prediction models based on big data sets?



a) Degraded pipe



b) Pipe state & failure risk prediction



c) Ultrasonic response

Develop pipe state prediction models from inline inspection data

The Dutch drinking water companies together are responsible for the operation of water distribution networks (WDS) consisting of 120.000 km of pipes. Although a lot of effort is put into predicting the remaining lifespan of these pipes without digging them up, the actual state of the pipes remains unknown.

Using newly developed inline inspection robots ('pipe pigs') that acoustically measure the pipe quality while crawling through the pipes, big data sets of ultrasonic responses are gathered. By signal processing of these raw acoustics data sets, a measurement of pipe quality can be developed.

These pipe state estimations can be used to develop a degradation model that expresses pipe quality as a function of for example soil type, ground water level, pipe age and pipe thickness. However, perhaps pipe diameter, pipe loading or even responsible water company might also influence degradation speed?

The developed pipe quality measurement algorithms and pipe degradation models can help to predict the state of most pipes and the corresponding risk of breakage, by performing only a few inline inspections.

Objectives

- Develop an algorithm to automatically convert raw acoustics data into a pipe state estimation measurement by using signal processing and programming
- Develop a prediction model to predict state of pipes based on factors such as soil type, pipe age and thickness.

During this project, you get to:

- Develop your own algorithms and models
- Work in close cooperation with inline inspection company Acquaint
- Be part of an enthusiastic research team at Wetsus, one of the leading research centers in water technology and innovation.

Profile

We are looking for highly motivated and independent student with a background in computer science (big data, signal processing, programming, (statistics)). Fluency in English is a requirement (oral and written).

Interested? Contact Hector Hernandez Delgadillo (hector.hernandezdelgadillo@wetsus.nl) or Caspar Geelen (caspar.geelen@wetsus.nl)

Source of figure b: <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/using-asset-genetics-to-unlock-hidden-capital>



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