TitanX Engine Cooling develops, manufactures and sells engine-cooling components and cooling modules to the global commercial vehicle market (heavy duty trucks and buses) and now also to the growing e-mobility market.

TitanX with annual sales of over 2 billion SEK has some 900 employees worldwide. The company is headquartered in Sölvesborg, Sweden and has development and manufacturing sites in Mjällby and Linköping in Sweden, and in Jamestown NY, USA. In addition we have manufacturing plants in Brazil, Mexico and Poland.

For radiators and charge-air coolers, an in-house software called HeatX is used that based on regression from experimental data, scales and predicts performance of new radiators and charge air cooler designs in terms of heat transfer, internal- and external pressure drops.

To be competitive the performance predictions must be more and more accurate and adapted to new product technologies. The requirements have increased over time, and with e-mobility vehicles there are in many cases very demanding requirements for the heat-exchangers:
- Low temperature differences between coolant and cooling air (ambient)
- Low internal pressure drop due to electrical pumps
- Low air side pressure drop due to electrical fans

The mission:

HeatX is coded in Visual Basic 6 (VB6). In parallel to migrating to later VB releases, we would like to find improvements to the algorithm, especially regarding how the regression is made from experimental data. During regression, the code create separate correlations for the two sides of the heat exchanger and we see that sometimes we get good fit to the data, but the correlations for each side differs a lot from similar heat exchanger technology.

The content of the work is:
- Extract relevant parts of the VB6 code and reproduce the regression in Matlab.
- Find explanations as to why the regression finds strange solutions
- If possible, propose new regression algorithm that prevents this from happening or guidelines and checks that warns when this is about to happen

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