Neural Network model approach for Vehicle Thermal Management

➤ Supporting companies: **GammaTech Engineering** (GTE) and **Stellantis**

❑ Start date: March 2025
❑ Project duration: 6÷8 months
❑ Site: GTE's offices in Turin
❑ Compensations: Meals, travel expenses
❑ Project objectives:
  – Development of a Real-Time capable Fast Running Model (FRM) and subsequently a Neural Network (NN) model of a **Vehicle Thermal Management** (VTM) system to predict thermal performance on sizing points.
  – Assessment of the different modelling approaches.

❑ Specifically, the student will:
  – Convert detailed thermal models to Real-Time capable FRMs and then to data-driven NN models of the following subsystems: powertrain components, HVAC, coolant loops.
  – For each subsystem, evaluate the FRM and the NN model accuracy against detailed one.
  – Integrate the FRM and the NN models into the complete vehicle platform and evaluate the overall model accuracy VS CPU time.