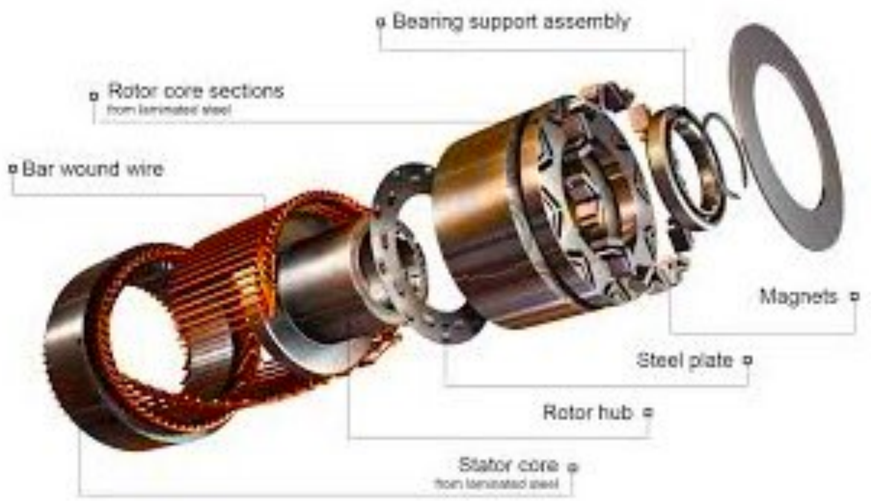
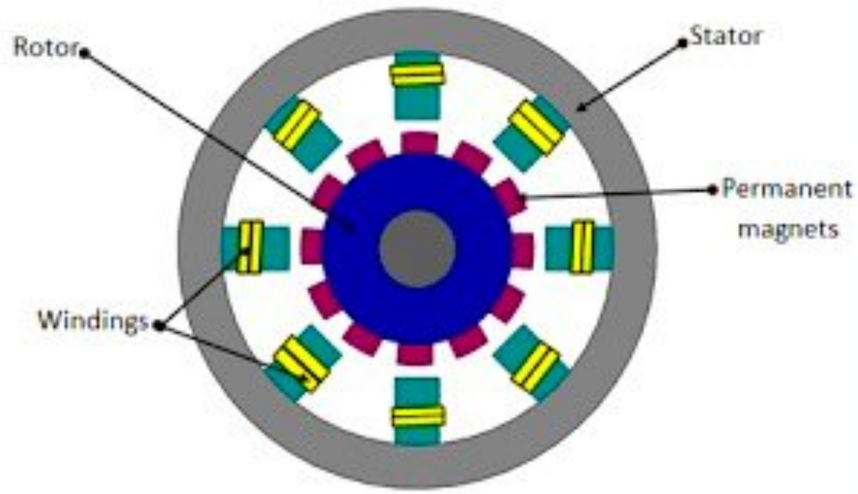
ELECTRIC MOTOR TEMPERATURE

Permanent Magnet Synchronous Motor

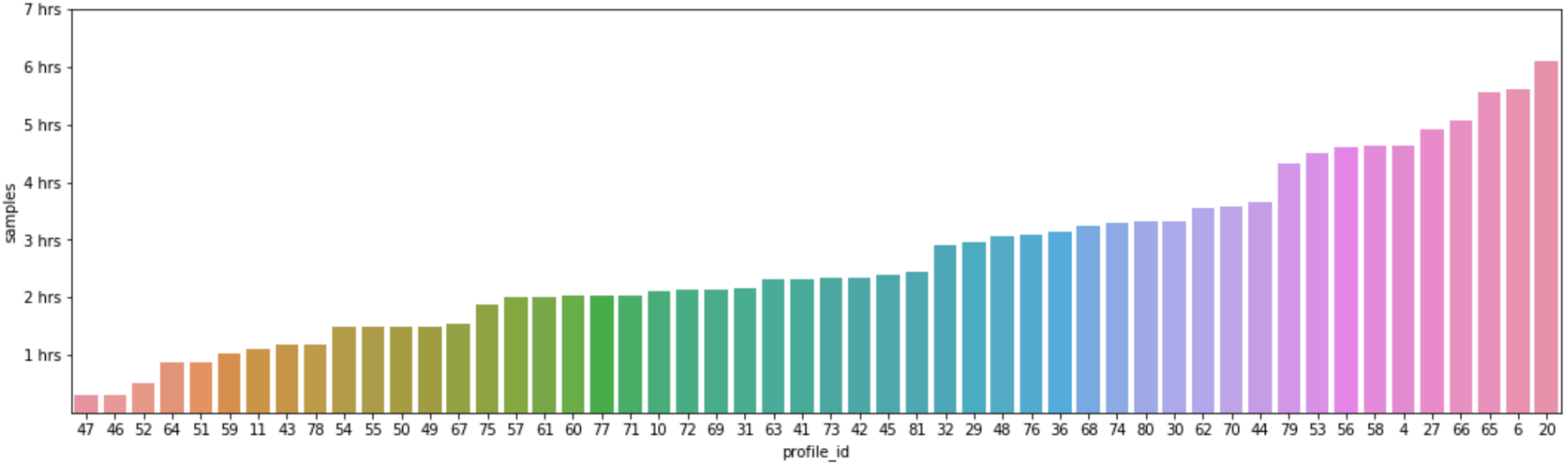




Temperature is an important factor to control in motor components

High temperatures can melt stator windings and demagnetise permanent magnets

Complicated internal structure of the motor discourage sensors based monitoring



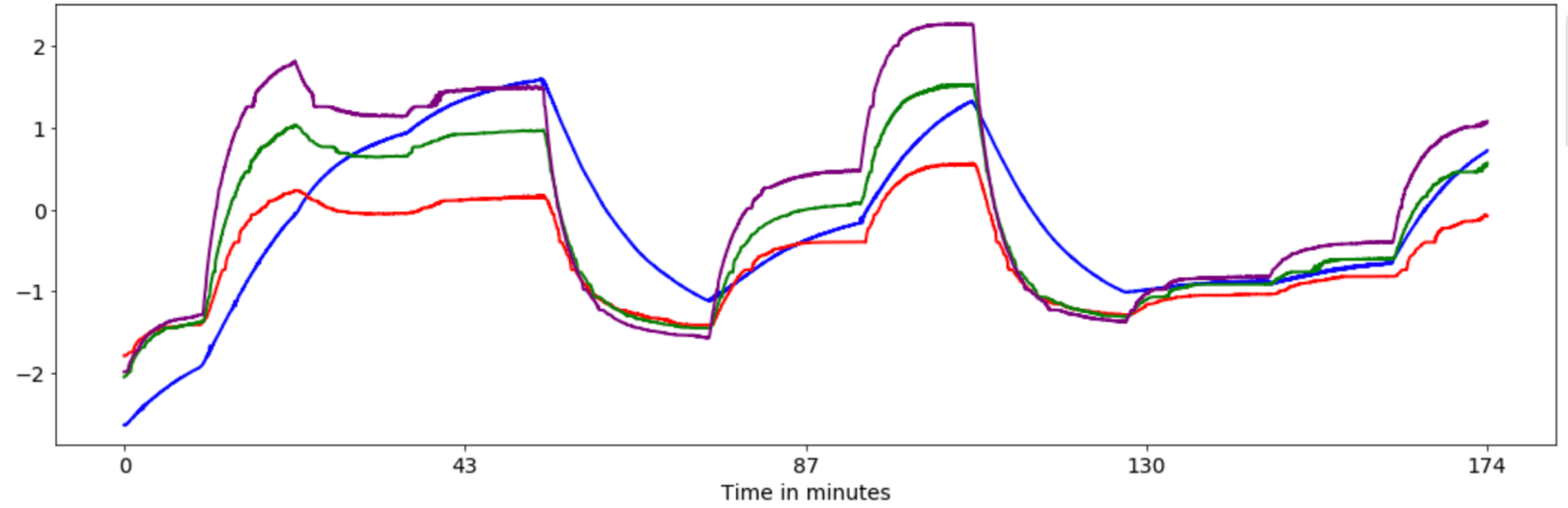
Test bench motor collects sensors data to train model

Most driving cycles denote random walks in order to imitate real world driving cycles

Other methods to estimate temperature required specialise field knowledge

Motor Temperatures

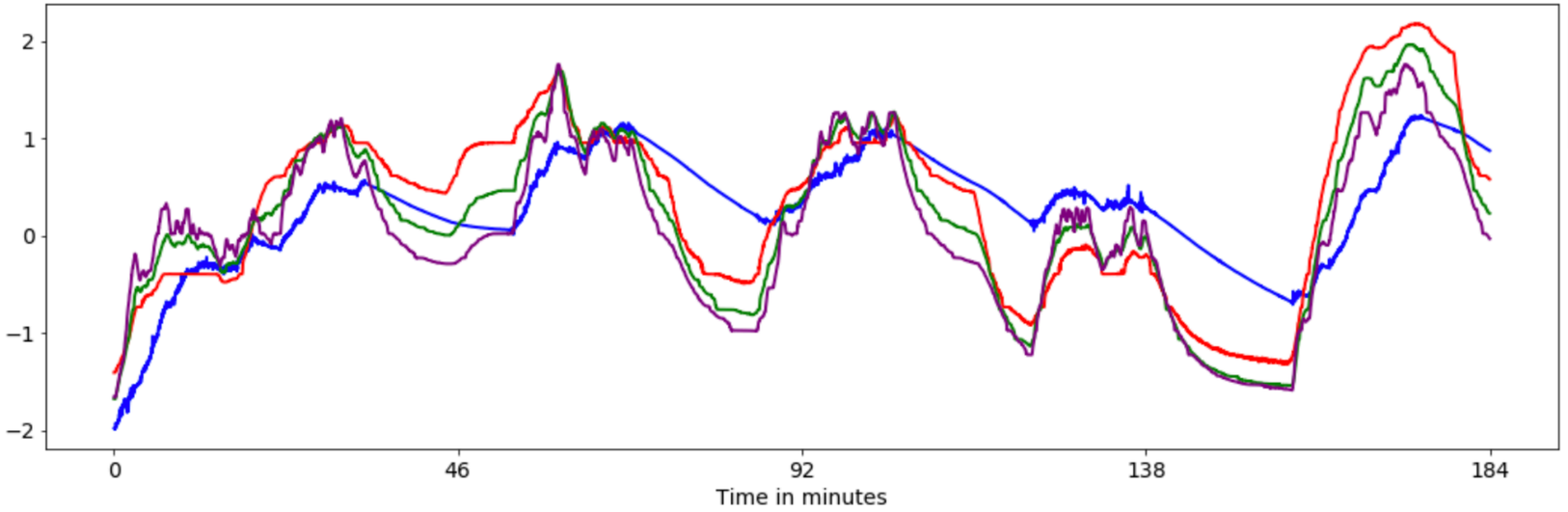
Profile 32



Target temperature ‘pm’ has a higher thermal inertia

The other three temperatures follow the same trend

Profile 76



Higher profiles numbers present stressed driving conditions

Permanent Magnet *Temperature vs Estimate*