Assumption 1: The temperature of the server can be approximated through Multiple Linear Regression, by a linear function of the atmospheric temperature, the number of users and the rate of data transmission:

$$\text{server temperature} = b_0 + b_1 \times \text{atmospheric temperature} + b_2 \times \text{number of users} + b_3 \times \text{data transmission rate}$$

where $b_0 \in \mathbb{R}$, $b_1 > 0$, $b_2 > 0$ and $b_3 > 0$.

Assumption 1: The temperature of the server can be approximated through Multiple Linear Regression, by a linear function of the atmospheric temperature, the number of users and the rate of data transmission:

$$\text{server temperature} = \text{atmospheric temperature} + 1.25 \times \text{number of users} + 1.25 \times \text{data transmission rate}$$

Assumption 2: The energy spent by a system (our AI or the server's integrated cooling system) that changes the server's temperature from T_t to T_{t+1} within 1 unit of time (here 1 minute), can be approximated again through regression by a linear function of the server's absolute temperature change:

$$E_t = \alpha|\Delta T_t| + \beta = \alpha|T_{t+1} - T_t| + \beta$$

where:

$$\begin{cases} E_t \text{ is the energy spent by the system onto the server between times } t \text{ and } t+1 \text{ minute} \\ \Delta T_t \text{ is the change of the server's temperature caused by the system between times } t \text{ and } t+1 \text{ minute} \\ T_t \text{ is the temperature of the server at time } t \\ T_{t+1} \text{ is the temperature of the server at time } t+1 \text{ minute} \\ \alpha > 0 \\ \beta \in \mathbb{R} \end{cases}$$

Assumption 2: The energy spent by a system (our AI or the server's integrated cooling system) that changes the server's temperature from T_t to T_{t+1} within 1 unit of time (here 1 minute), can be approximated again through regression by a linear function of the server's absolute temperature change:

$$E_t = |\Delta T_t| = |T_{t+1} - T_t| = \begin{cases} T_{t+1} - T_t & \text{if } T_{t+1} > T_t \text{, that is if the server is heated up} \\ T_t - T_{t+1} & \text{if } T_{t+1} < T_t \text{, that is if the server is cooled down} \end{cases}$$