1. **Detailed mathematical derivation process of the Akima interpolation method:**

The Akima interpolation method specifies that the interpolation between two measured data points (e.g., the third and fourth data points) is performed as formulated in Equation (S1) and (S2).

 (S1)

 (S2)

where *p0*=*y3* and *p1*=*t3*. *t3* and *t4* denote the slopes at the third and fourth measured data points, respectively. These parameters are generally calculated using the Equations (S3).

 (S3)

where *i*=3,4. Since Equation (S3) becomes invalid when the denominator equals zero, a specialized regulation is implemented under such conditions: *ti*=*mi* Here, *mi* denotes the slope parameter, which is utilized in the subsequent Equations (S4).

 (S4)

when processing endpoints of a dataset, the critical procedure involves supplementing additional points be-yond these boundaries to ensure continuity and smoothness in the interpolation process. This is achieved by virtually appending two pseudo-points (namely (*xi+1*, *yi+1*) and (*xi+2*, *yi+2*)) to extend the dataset. Notably, the Akima interpolation method does not require precise coordinates of these augmented points but rather necessitates de-fining their slope parameters. The parabolic calculation governing the endpoint and its virtual extensions is formulated in Equation (S5).

 (S5)

yielding Equations (S6).

 (S6)

The final interpolation is subsequently determined through the systematic application of Equations (S1), (S2), and (S3).

1. **The relationship between the number of feature variables and MAPE:**

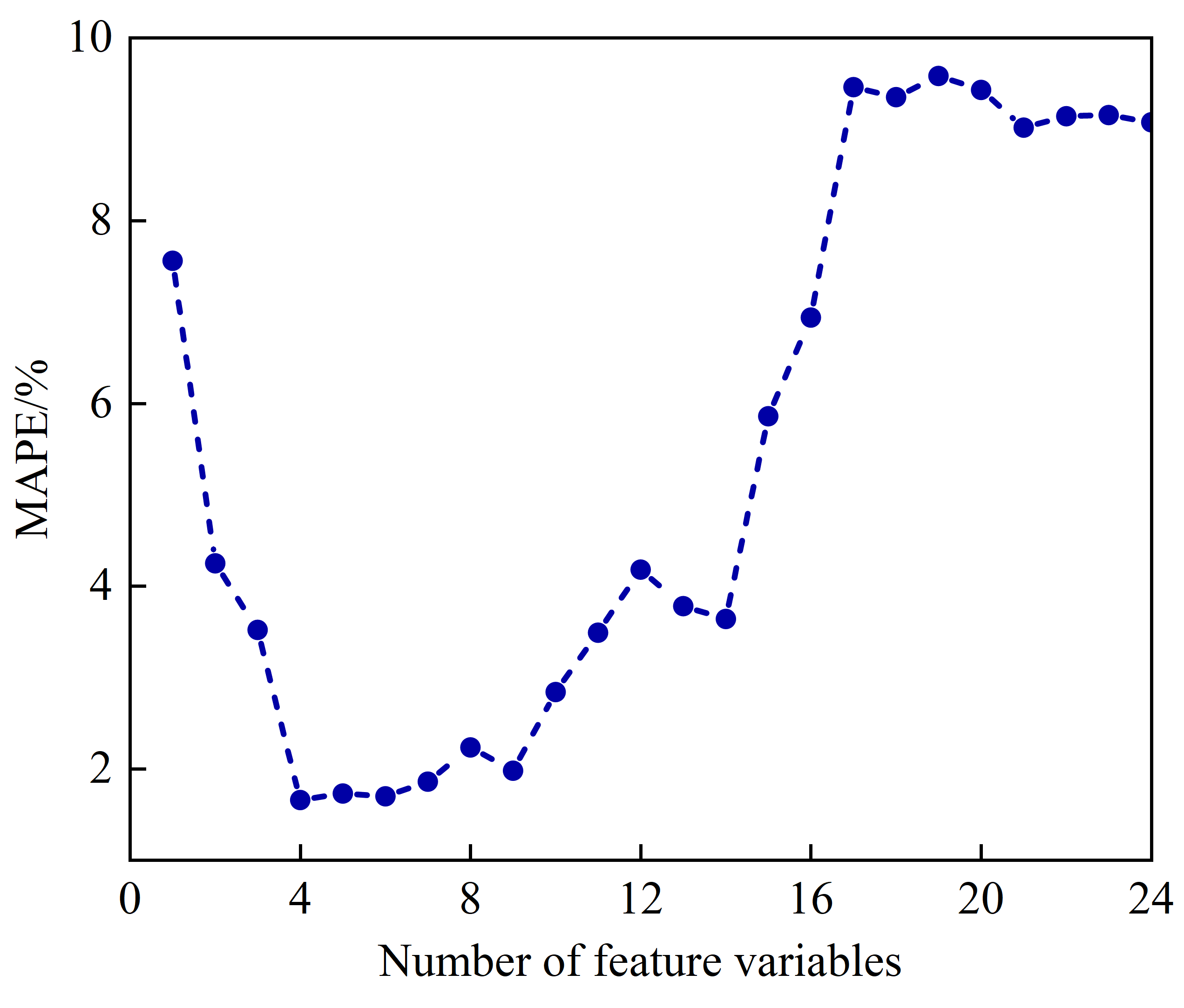


Fig.S1 The relationship between the number of feature variables and MAPE