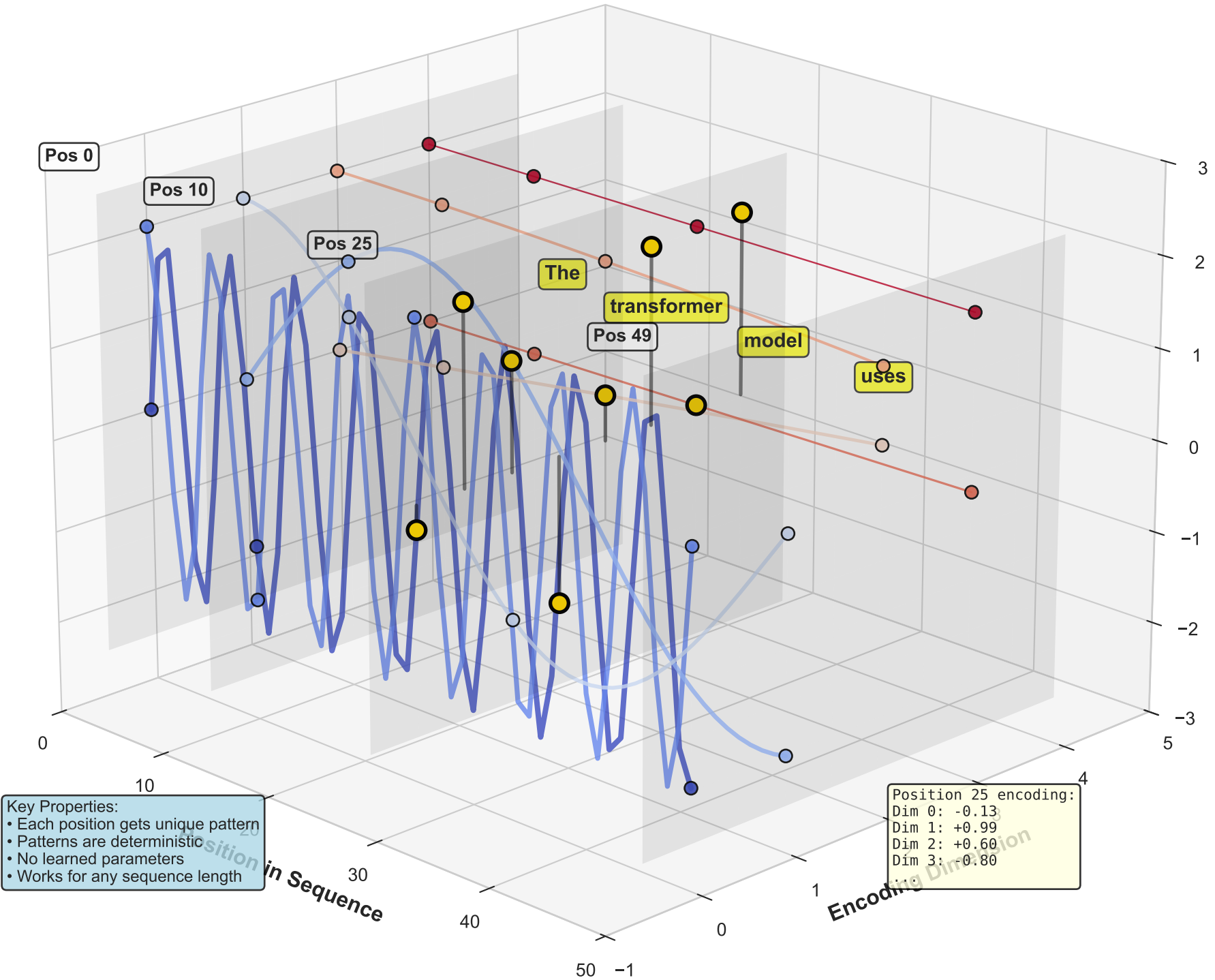


Positional Encoding: Unique Wave Patterns for Each Position

Low frequencies capture global position, High frequencies capture local patterns

- Low frequency (global)
- Medium frequency
- High frequency (local)



- Key Properties:
- Each position gets unique pattern
 - Patterns are deterministic
 - No learned parameters
 - Works for any sequence length

Sine and cosine waves at different frequencies create a unique "fingerprint" for each position