Stepper Motor

A **Stepper Motor** is a special type of motor that rotates in **small, fixed steps** instead of rotating continuously like a normal DC motor.

1. **Step-by-step movement:**
    - Each signal given to the motor makes it move a fixed angle (called a *step*).
    - Example: If one step = 1.8°, then 200 steps = 360° (one full rotation).
2. **Precise control:**
    - Because it moves in steps, we can control exactly how far it turns.
    - No need for sensors to track its angle (open-loop control).
3. **Speed & direction control:**
    - By changing the speed of signals, we can control motor speed.
    - By reversing signal sequence, it rotates in the opposite direction.
4. **Applications:**

- 3D printers (for moving the nozzle/bed).
- CNC machines (for cutting/drilling).
- Robotics (precise arm movement).
- Camera control (panning/tilting).

Difference from DC Motor:

- **DC Motor:** Rotates continuously when power is applied.
- **Stepper Motor:** Moves in fixed steps when signals are applied.