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| **eCube** | |
| *Implementation & Analysis of various Control Techniques to Balance a Cube* | |
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| **Description:** | A cube-shaped Reaction wheel-based 3D Inverted Pendulum. LQR (Linear Quadratic Regulator) and PID control techniques were applied in Simulation followed by implementation on the physical robot to balance the cube on its Vertex and Edges. |
| **Tech Stack:** | Control Systems (LQR), Embedded Systems, CAD Modelling, C++, Lua, Mathematical  Modelling (GNU Octave), Robot Simulation (CopelliaSim/V-REP) |
| **Hardware:** | ESP32 microcontroller, BLDC Motors, ICM-20948 IMU |
| **Latest Update:** |  |
| **Future Work:** |  |
| **Project Link:** | [eCube Drive Link](https://tinyurl.com/e-cube) |