**ACKNOWLEDGMENT**

The successful completion of any task would not be possible without the people who made it possible. So it is with gratitude that we acknowledge the help that crowned our efforts with success.

We are profoundly indebted to our project guide, **Dr. Anil S. Pol,** Assistant Professor in the Dept. of Mechanical Engineering, VTU Belagavi. His precious guidance, inspiring discussions, and constant supervision throughout the course of this work have been instrumental. His timely help, constructive criticism, and conscientious efforts have enabled us to present the work contained in this thesis.

We express our deepest thanks to **Dr. Ravindra R. Malagi,** Professor and Chairperson, Department of Mechanical Engineering, V.T.U. Belagavi for providing all the support for the completion of this Project.

We would like to extend our thanks to **Dr. V. M. Kulkarni.** Professor in the Department of Mechanical Engineering, VTU Belagavi For guiding and encouraging us throughout the effort.

We would like to extend our thanks to **Mr. Santosh Ittanagi.** VRIF, VTU Belagavi For guiding and encouraging and providing the workplace for the project work.

Finally, I extend my special thanks to my parents and friends and all Faculty staffs for their all-out support and for boosting us up with their best wishes.

**Abstract**

The rapid advancements in robotics and artificial intelligence have spurred the development of humanoid service robots, poised to revolutionize various sectors of society. Humanoid service robots are designed to mimic the appearance and movements of humans, enabling them to interact with people more intuitively and naturally. These robots are equipped with a wide range of sensors, and actuators, enabling them to perceive and understand their environment, learn from interactions, and perform various tasks autonomously.

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**NOMENCLATURE**

**CAD** - Computer Aided Design

**FRP** - Fiber Reinforced polymer

**PLA** - Polylactic acid

**DOF** - Degrees of Freedom

**SG90 -** It is a small and light weight digital servomotor with high output power

**MIT** - The Massachusetts Institute of Technology (MIT)

**OpenCV** - OpenCV (Open-Source Computer Vision Library)

**MS** - Mild steel

**PID** - Proportional, integral, Derivative type.

**F** - “F” refers to the command to move forward.

**R** - “R” command to make the robot turn to right direction.

**L** - “L” command moves the robot to left .

**B** - “B” command moves the robot backwards.

**S** - The command “S” stops the robot motion.

**H** - The “H” Handshake.

**N** - The command “N” namaste (greeting) gesture.

**Hi** - Hi gesture by raising its hand.

**Home** - The “Home” command is for returning to the main home

**Amp** - (Ampere) a unit of electric current