

A REVIEW PAPER ON 3D PRINTING OF 2-WHEELER GEAR SHIFTER

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ABSTRACT

The gear shifter in two-wheelers is an essential component that allows riders to change gears and control the speed and power of vehicles. The existing foot gear shift pedals for two-wheelers often lack of optimal design and customization, leading to discomfort and inconvenience for riders. The traditional manufacturing process for two-wheeler gear shifters can be time consuming and expensive.

This project aims to explore the possibilities of modelling and 3d printing a two-wheeler gear shifter. This problem statement involves finding a cost-effective and efficient method to produce gear shifters with improved strength and durability. By utilizing 3D printing technology, can create complex geometries and optimize the design for better performance. The solution involves designing the gear shifter using solid works software, simulating its functionality, and then 3D printing it using suitable materials. The project aims to demonstrate the feasibility and benefits of using 3D printing in the production of two-wheeler gear shifters.

Keywords:

Gear shift Pedal, Customization, Design, Improvement, 3D printing.

INTRODUCTION

The gear shift pedal is a fundamental component of motorcycles, enabling riders to control the transmission system with precision and confidence. Its design, functionality, and customization options are essential considerations for riders seeking optimal performance and comfort on the road. The gear shift pedal is an essential component of motorcycles, enabling riders to change gears smoothly and efficiently. It serves as the interface between the rider's foot and the transmission system, allowing for precise control over the motorcycle's speed and power delivery. Gear shift pedals come in various designs and configurations, tailored to different types of motorcycles and rider preferences.



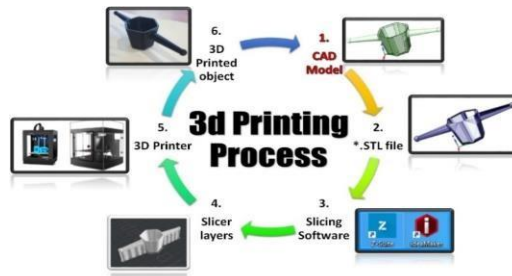
Different types of gear shift pedals.

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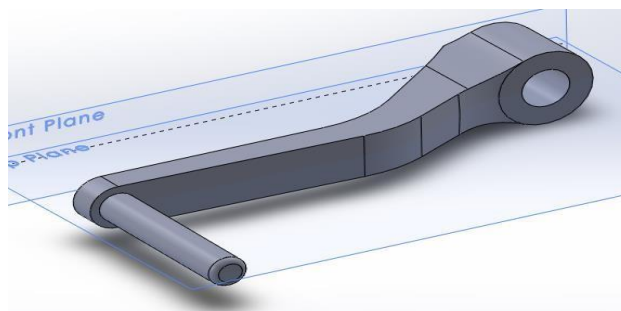
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METHODOLOGY

1. Create a digital model of the object to print. There are many different software programs you can use to create 3D models, such as AutoCAD, Blender, and Sketch Up.
2. Export the model as an STL file. This is a file format that is used by most 3D printers to interpret the model and create the physical object.
3. Prepare the 3D printer and set up the print bed. This may involve leveling the print bed, installing the filament, and adjusting the printer's settings.
4. Start the print process. The printer will read the STL file and begin building the object layer by layer.
5. Monitor the print progress. Some printers have cameras or displays that allow you to see the object as it is being printed.
6. Post-processing. Once the print is complete, you may need to remove any excess material or support structures and clean the object.
7. Finishing. Depending on the material you used and the desired finish, you may need to apply additional treatment to the object, such as sanding or painting.

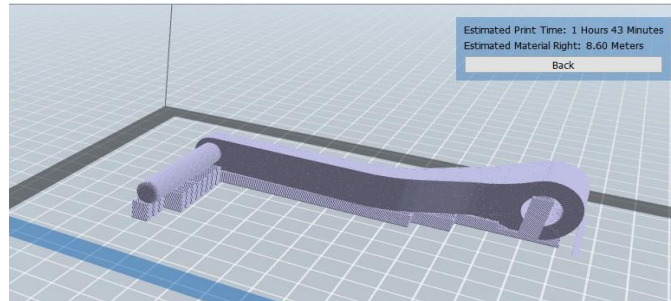


MODELLING OF GEAR SHIFT PEDAL



Model of gear shift pedal

PRINTING OF GEAR SHIFT PEDAL



LITERATURE SURVEY

The 1891 **Panhard et Levassor** is considered a significant advance in automotive transmissions since it used a three-speed manual transmission. This transmission, along with many similar designs that it inspired, was a non-synchronous (also called sliding-mesh) design where gear changes involved sliding the gears along their shafts so that the desired cogs became meshed. [1]

The 1952 **Porsche 356** was the first car to use a transmission with synchromesh on all forward gears. In the early 1950s, most bikes only had synchromesh for the shift from third gear to second gear. [2]

In the 1970s, most transmissions had three or four forward gear ratios, although five-speed manual transmissions were occasionally used in sports bikes such as the 1948 **Ferrari 166 Inter** and the 1953 **Alfa Romeo 1900 Super Sprint**. Five-speed transmissions became widespread during the 1980s, as did the use of synchromesh on all forward gears. [3]

Tadashi Ichida, Akira Tsumiyama (2006) Manual Gear Shift Mechanism. A manual gear shift mechanism for a bicycle having a positioning mechanism for controlling the motion of the piston of a master cylinder assembly is disclosed, wherein the master cylinder assembly is in communication with a slave cylinder for operation of a derailleur. The positioning mechanism preferably includes a pivot softly spaced apart from the handle bar. [4]

Ken Gilbert (2003) Electrohydraulic control system. The electrohydraulic control system for the transmission and transfer consists of various sensors and switches, a transmission control module (TCM) and the hydraulic controlling units including solenoid valves. The system controls the automatic transmission operation, including gear shifting, lockup clutch operation, line pressure, automatic control pattern selection (Base and Power), and gear-shift timing. It also controls the total of eight solenoids by sending appropriate signals to them. [5]

CONCLUSION

In conclusion, the 3D modeling and printing of the 2-wheeler gear shift pedal using SolidWorks has proven to be a successful approach in developing a functional prototype. The design considerations, including ergonomic factors and compatibility with various motorcycle models, were meticulously incorporated into the model. The use of SolidWorks allowed for precise modeling, ensuring that the gear shift pedal's dimensions and geometry met the required specifications. The 3D printing process enabled rapid prototyping, allowing for quick iterations and

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modifications to the design. The choice of material (specify material used) provided the necessary strength and durability required for the gear shift pedal's functionality.

ACKNOWLEDGEMENT

We wish to express our sincere thanks to **Dr. H.S SAINI, Managing Director, Guru Nanak Institutions and Dr. KODUGANTI VENKATA RAO, Director**, Gura Nanak Institutions Technical Campus, School of Engineering and Technology, for providing us with all the necessary facilities and their support

We place on record, our sincere thanks to **Dr. A. RAJ KUMAR, Professor** and Head of the Department, Mechanical Engineering for their wholehearted co-operation, providing excellent lab facility, constant encouragement and unfailing inspiration.

We would like to say sincere thanks to **Mr. V. SHYAMU**, Assistant Professor, Department of Mechanical Engineering for coordinating Projects.

We would like to say sincere thanks to our guide **Mr. HAJI BANOTHU, Associate Professor**, Department of Mechanical Engineering for Coordinating Projects for the suggestions and constant guidance in every stage of the project, we also like to thank all lecturers helping us in every possible way. On a more personal note, we thank our beloved parents and friends for their moral support during our project.

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