



## Rear Break Assist Using Voice Recognition

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**Abstract :-** Main motto of our project "Rear Brake Assist Using Voice Recognition" to suggest an idea to minimize or avoid the deceleration on heavy vehicles and small vehicles on uphill using Voice Recognition. This idea will lead to implementing a safety device to the vehicle. Bendix is a stator used in all vehicles to start, it rotates only in a Forward direction and reverse direction is restricted. When the intermediate gear is disengaged the hollow pipe will move in both direction and gear will engage to the Bendix, the model moves in forward direction. This will be a new safety mechanism to vehicles.

**Keywords:** auto brakes, voice control, Bendix shaft, rear brakes automation.

## I. INTRODUCTION

The first fundamental research idea is taken out by us, there are many types of accident control systems stocked in the vehicle but every company holds large amounts as per advertising it for vehicle and human safety. It gets you to the safer condition but did not adjust to mid-range vehicles. For safety and cost effective purpose we are trying to accelerate the braking systems via the automotive piece that is necessary for the automobile department but newly used for control system purpose.

The survey conducted by us found all the convergence made are, if the vehicle accidentally collides to the front part. It manages to save the human inside the vehicle which is good but there is nothing if the vehicle collides from behind. Eventually many vehicle brands are built with this type of system but they offer huge amounts of cost. Our system is helpful and affordable for mid-range, low range vehicles like small trucks, cars, and three tire vehicles.

The idea went through, when the vehicle can't control itself from rear collision. The use of brakes provides you from forward disasters but not from the rear. Our system This increases wear on both sets of teeth. For this reason the Bendix drive has been largely superseded in starter motor design by the pre-engagement system using a solenoid d.

can help you to avoid rear disasters as per on the hill stations the part that we use can adjust to the gear on the voice note and the vehicle will only moves ahead. You didn't need to use brakes. Our system takes care of your vehicle does not collides with the rear vehicles

After discussing many ideas between us, we decided to go through what kind of necessities that have not brought to humans. The ideal research is all about the vehicle and on the top human's safety. the part that we use is friendly to automotive industries but we specialized it with the voice control like newly entered vehicles in the market

## II. EASE OF USE

*A Bendix drive is a type of engagement mechanism used in starter motors of internal combustion engines. The devices allow the pinion gear of the starter motor to engage or disengage the flywheel of the engine automatically when the starter is powered or when the engine fires. It is named after its inventor, Vincent hugo Bendix.*

**Operation:** - The Bendix system places the starter drive pinion on a helical drive spring. When the starter motor begins turning, the inertia of the drive pinion assembly causes it to wind the spring forcing the length of the spring to change, and allowing the pinion to engage with the ring gear. When the engine starts, back drive from the ring gear causes the drive pinion to exceed the relative speed of the starter, at which point the drive pinion is forced back and out of mesh with the ring gear. The main drawback to the Bendix drive is that it relies on a Certain amount of "clash" between the teeth of the pinion and the ring gears before they slip into place and Unless they happen to align perfectly at the moment they engage, the pinion teeth will strike the teeth of the ring gear side-to-side rather than face-to-face, and continue to rotate until both align.

### III. Architecture

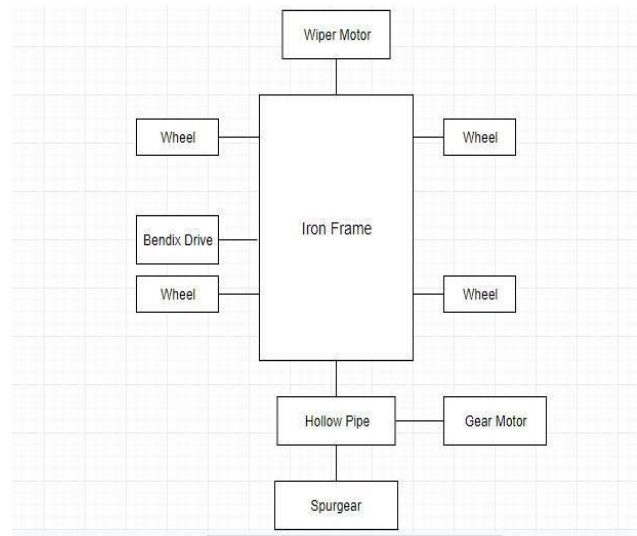
The major long term automation property is generated in the presence of highly integrated safety purpose. The innovation is cultivated with the help of existing safety modules. In studies about how certain systems work on the basis of terms that follow safety and low maintenance. The module is made up of casting iron rectangular frames which leads to the actual model like a vehicle. The chassis, joint by the wheels on four sides. Axel helps to rotate the wheels and also with the braking mechanism. To ensure that not to cross connect the part all the weight is stiff to a single part connected on the upper side of the right wheel. All the safety braking components in vehicles are basically connected to separate boxes made on the perpendicular to the axle.

But in this project the component is connected on the rear wheel shaft to vigorously mesh with axle gear. The ratio between axle gear and Bendix gear is lot much sufficient to meshing that it takes less time and positioning to attach. However the timing needs more consumable and highly appropriate function.

There are many alternatives with respect to this system but more are coming in the expensive vehicle. The system that is built with the help of secret components is for low price vehicles.

There are often accidental things happen to vehicle. Some are by driver or pedestrian. Our project helps to reduce accidents generally happening on the rear side of vehicles. When the driver puts the brake with clutch to avoid accidents happening after the vehicle but can't recognize the rear view. That if the vehicle moves backward. The pedestrians or vehicles behind can't get touched. This follows an accident which I did not even think of. The Bendix that we used is attached to the rear axle. Most of the accidents happen in the uphill areas where the driver cannot control vehicles and vehicles went downwards because of heavy weights or heavy goods. The driver detaches the clutch and brakes equally to move forward. Meanwhile sometimes the vehicle loses control and moves backward. Even drivers can't do anything to expect putting brakes again this leads to rear collision.

The part that we used is attached to axle gear and specialty is, it can't move in a backward direction so all the force is applied is to forward.



Dig 1: Architecture of Iron Frame

When we dropped the bendix it can't moves backward. The process starts when the vehicle starts moving forward on a hill. And the software mechanism that we attached gives signal to drives to drop the bendix. Then with the help of voice control the driver gives command to voice mechanisms to drop Bendix. The software mechanism that we used is control over Arduino. Help with voice recognition. The Arduino is connected with the sensor that allows you to take commands from the driver. The two sensors that we connect are gyro meter and accelerometer.

MPU 6050 sensor: - This sensor is a device that can measure and maintain the orientation and angular velocity of an object. These are more advanced than accelerometers. These can measure the tilt and lateral orientation of the object whereas accelerometer can only measure the linear motion Gyroscope sensors are also called as Angular Rate Sensor or Angular Velocity Sensors. These sensors are installed in the applications where the orientation of the object is difficult to sense by humans.

Measured in degrees per second, angular velocity is the change in the rotational angle of the object per unit of time. The basic underlying working principle of an accelerometer is such as a dumped mass on a spring. When acceleration is experienced by this device, the mass gets displaced till the spring can easily move the mass, with the same rate equal to the acceleration it sensed. Then this displacement value is used to measure the give the acceleration.

The purpose raised with the sensor attached gives indication to the driver when to drop Bendix. Its up to the hill when vehicle climb to it. Arduino senses the positioning and tells the driver to pull the Bendix. All this happened with the help of voice control that is

voice recognition module :- Advancement in technology has developed an intelligent man-machine interface technique that facilitates computers or machines or robots to be operated using the voice commands of humans without using any input systems, such as keyboards or mouse. This human-machine interface (HMI) can be achieved using voice recognition modules. In this article, we will discuss the voice recognition modules along with their working procedure and applications.

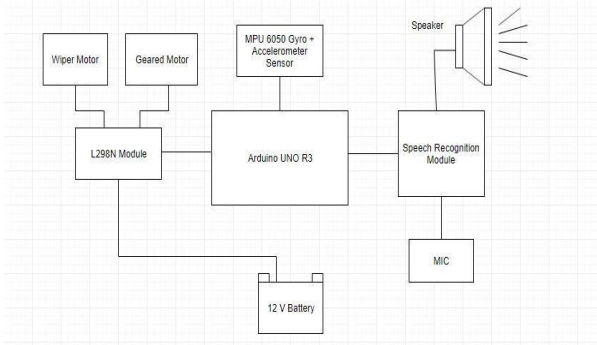


Fig 2: Architecture of connections with Arduino

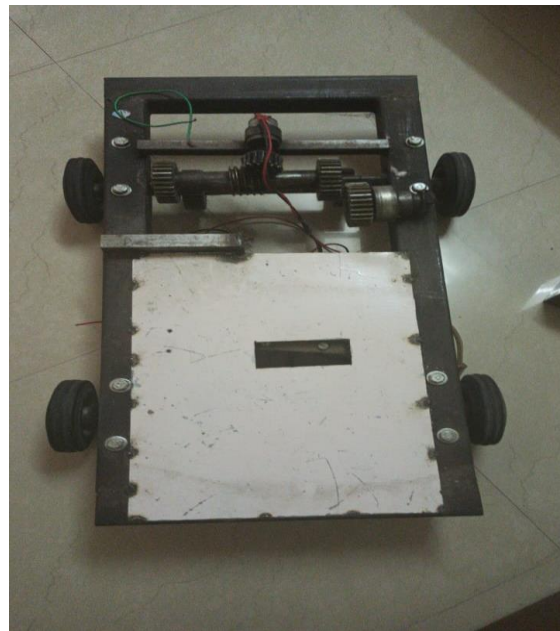
#### IV. Hardware and Software Requirements

Software	Hardware
Arduino Software (IDE)	Bendix Drive Arduino UNO 3 L298N module Voice Recognition module MPU6050 Sensor (gyro + Accelerometer) 12V Battery Speaker

#### V. Result



The connection of MPU6050, L298N and Motor Drive to Arduino Uno3



The Framework of Vehicle with Bendix And Gear attachments.

#### VI. CONCLUSION

The main moto of our project is to suggest an idea to minimize or avoid the deceleration, rear and collision of vehicle on uphill. This idea will lead to implanting a safety device to the vehicle.

There should be automatic engagement and disengagement of rear end brake, at the start and the end of highways and Ghats so the driver should drive the vehicle on uphill unflinchingly.

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