STUDY ON SPOTTING OF IMBRICATIONS COMMUNITIES IN SOCIAL TAGGER SYSTEM

Hitendra Chaudhary[1], Priyanka Jhavar[2]
[1]*Research Scholar, School of Engineering, SSSUTMS, M.P., India*
[2] *Associate Professor, School of Engineering, SSSUTMS, M.P., India*

ABSTRACT

This study describes in detail in an understandable way to how to convert the traditional manually gear shifting mechanism to a semi-automated gear shifting mechanism. The development has concluded also the gearbox, which became much smoother and produces less noise. Gear shifting mechanism must be easy to use and workable, these Demands are very important especially for two wheeler motorcycle and four wheeler & small cars used by special needs people. The power transmission is the most important thing in the present mechanically developing area. In case of the automobiles the power transmission is done by the gear box arrangement. Hence for the perfect transmission of power and quick response the optimum gear pair with the perfect gear shifter is most necessary.

Keyword – *Gear, Electrical motor, IC engine, Embedded System, Pneumatic gear box, cost estimation.*

1. INTRODUCTION

For some drivers, the gear shifting can cause some confusing at driving specially at critical situations. A crowded road on a hill or a sudden detour makes a lot of tension on the driver. One of the difficulties in this situation is to choose the right reduction ratio and engaging it at the right time. This design helps the driver to increase his focusing on the road. Also reduces the time needed to engage the required reduction ratio, which increases the vehicles' response. Gear shifting mechanism must be easy to use and workable, these demands are very important especially for small cars used by special needs people. For some drivers, the gear shifting can cause some confusing at driving specially at critical situations. A crowded road on a hill or a sudden detour makes a lot of tension on the driver. One of the difficulties in this situation is to choose the right reduction ratio and engaging it at the right time.

2. HISTORICAL NOTE

Motorcycles evolved from the "safety" bicycle, a bicycle that offered many advantages in stability, braking and ease of mounting. The essential features of a safety bike-included: Spooked front and rear wheels of the same size - roughly 30 inches in diameter (compared to the "ordinary" bicycle, which had a 48-inch front wheel and a 30 inch,rear wheel) The first bicycle to provide all of these features and gain market acceptance was the Rover Safety, designed by John Kemp Starley in 1885. After the Rover pattern took over the market, safety bicycles were simply called "bicycles." It didn't take long for someone to take the user-friendly safety bicycle design and strap on an internal combustion engine. The first to do so successfully was Gottleib Daimler, who is credited with building the first motorized bicycle -- or motorcycle -- in 1885. Daimler's motorcycle included a single-cylinder Otto-cycle engine mounted vertically in the center of the machine. It also had one wheel in front, one wheel in back and a spring-loaded outrigger wheel on each side for added stability. Its chassis consisted of a wooden frame and wheels with wood spokes and iron rims. Such designs were called "boneshakers" because of the rough, jarring ride they delivered. The next notable motorcycle was designed in 1892 by Alex Millet. Millet incorporated the basic safety bicycle design, but added pneumatic tires and a five-cylinder rotary engine built into the rear wheel. The cylinders rotated with the wheel, while the crankshaft formed the rear axle.

The first Harley-Davidson`s was basically a motorized bicycle. The Hildebrand & Wolfmueller was the first successful production two-wheeler, patented in Munich in 1894. More than 200 vehicles made it onto the road. Hildebrand & Wolfmueller decided to cool their parallel-twin engine with water, which required a water tank and radiator. Their solution was to build the coolant system into the top of there-are-fender. In 1895, DeDion-Buton

introduced an engine that would revolutionize the motorcycle industry by making mass production possible. The DeDion-Buton engine was a small, light, high-revving four-stroke engine that could generate half a horsepower. Although DeDion-Buton used the engine in its motor tricycles, motorcycle manufacturers around the world copied and used the design.

American production motorcycles were also based on the DeDion-Buton engine. The two most famous American motorcycle manufacturers to incorporate the DeDion-Buton engine, however, were the Indian Motorcycle Company and'Harley-Davidsons'.

A Harley-Davidson`s military-motorcycle

When World War I started in 1914, the automobile did not own the roads. Motorcycles filled the gaps as dependable, reliable vehicles. In the war, their utilitarian nature was put to good use. American and European armies used motorcycles extensively to gather reconnaissance, deliver messages and, in some cases, engage in combat. In 1917, roughly one-third of all Harley-Davidson motorcycles produced were sold to the U.S. military; in 1918, that figure rose to 50 percent. By the end of the war, it is estimated that the Army used some 20,000 motorcycles -- most of them Harley-Davidsons. Carl Oscar Hedstrom and George M. Hendee founded the Hendee Manufacturing Company in 1900 with the goal of producing a "motor-driven bicycle for the everyday use of the general public." In 1901, they rolled out the Single, a 1.75-horsepower motorcycle that could reach a top speed of 25 miles per hour. They also decided to roll out a brand-new trade name for their motorcycles. That name was Indian, and it was the world' best-selling motor cycle until World War I. Founded by William S. Harley and Arthur Davidson in 1902, the Harley-Davidson Motor Company went on to produce the most influential machines of the industry. Its first models used the basic DeDion-Buton layout and borrowed heavily from chassis designs already employed by other motorcycle manufacturers, including Indian, Excelsior and Pope. The Harley-Davidson eventually made its presence known with its sturdy, strong and durable machines. In 1908, Walter Davidson, riding what came to be known as the Silent Gray Fellow, scored a perfect 1,000 points at the 7th Annual Federation of American Motorcyclists Endurance and Reliability Contest. Soon after, Walter Davidson, Arthur's brother, set the FAM economy record at 188.234 miles per gallon. By 1920, Harley-Davidson was the largest motorcycle manufacturer in the world.

Table:-1 Gear reduction ratio

GEAR STAGE	GEAR RATIO
I	**1:1**
II	**1:1.6**
III	**1:2.6**
IV	**1:4.3**

3. LITERATURE REVIEW

Igried A l-Khawaldeh was done how to convert the traditional manually gear shifting mechanism to a semi automated gear shifting mechanism by using the Programmable Logic Controller (PLC).Increasing demands on performance, quality and costar the main challenge for today's automotive industry, in an environment where every movement, component and every assembly operation must be immediately and automatically recorded, checked and documented for maximum efficiency. Automotive technology has been developed in many areas, like ABS system, active steering system and other safety systems, which are implemented to increase the passenger safety and comfort. The development has concluded also the gearbox, which became much smoother and produces less noise. Gear shifting mechanism must be easy to use and workable, these demands are very important especially for small cars used by special needs people. This work was achieved at the Department of Mechanical Engineering, Faculty of Engineering Technology, Al-Balqa' Applied University within 2009. , Amman, P.O. Box 15008, 11134, Jordan.

For some drivers, the gear shifting can cause some confusing at driving specially at critical situations. A crowded road on a hill or a sudden detour makes a lot of tension on the driver. One of the difficulties in this situation is to choose the right reduction ratio and engaging it at the right time (Brejcha et al., 1993; Okada et al., 2002; Taguchi et al., 2003; Yi, 1998). This design helps the driver to increase his focusing on the road. Also reduces the time needed to engage the required reduction ratio, which increases the vehicles' response. This design may be considered as an educational model for gear shifting mechanism. P. Alexander M.E. was done gear shifting mechanism was designed and applied on an auto clutch featured bike to make the gear transmission process faster and less destructible for the diver using Embedded System design. The present automatic transmission is fully mechanically controlled and

costs very high and it is not suitable for small displacement engines. But the gear transmission mechanism designed makes driving easier and to achieve efficient driving. This new device must be reliable, has small dimensions, economical and low maintenance cost. This project aims to improve the gear shifting process with a suitable control mechanism to implement in clutch featured bikes. According to the suggested gear shifting method, the microcontroller selects the transmission gear as per the speed of the vehicle without any human interference. The head light control is designed which dims and dips if any vehicles comes opposite with high beam. This is a safety feature installed to avoid accidents caused due to high beam lights having blinding effect on drivers coming from the opposite direction.

This work was achieved at the Department of Mechanical Engineering, Faculty of
Engineering Technology, P. Alexander M.E.1, T. Sudha M.E.2, M. Omamageswari M.E.3
1 (Department of Instrumentation & Control Engineering, Sri Manakula Vinayagar
Engineering College, Puducherry, India, aim4high@gmail.com)
2 (Department of Instrumentation & Control Engineering, Sri Manakula Vinayagar
Engineering College, Puducherry, India, t.sudhavelu@gmail.com)
3 (Department of Instrumentation & Control Engineering, Sri Manakula Vinayagar
Engineering College, Puducherry, India, omamagi@yahoo.com)

ALI Amir Ibrahim was done the topic of current interest in the area of controller development for automatic transmissions with a finite number of gearshifts which transmits the gears automatically with respect to speed. Gearshifts in automatic transmissions involve a change in the power flow path through the transmission.

Advantages of these automatic transmissions include simplicity of mechanical design and savings in transmission weight and size, which are beneficial in terms of fuel economy and production costs. This enables gain in fuel economy while meeting drivability and performance goals, these savings become more significant.

The designed automatic transmission is done in an auto-clutch featured bike which can be applied effectively and efficiently in a clutch featured bikes with suitable control techniques. The ultimate goal of our project is to transmit the gears without the human interference and to attain efficient, safe and easy drive. In recent years, the sustainable development of automatic manual transmissions (AMTs) control in vehicles is conspicuous. The control applications have grown fast and steadily due to the tremendous progress in power electronics components and the control software that enhance the requirements for delivering higher vehicles performance. AMTs control strategies achieve a reduction in the driveline dynamic oscillations behavior during gear shifting and clutch starting up processes. AMTs future expectations are an increase of torque capacity, more speed ratios and the development of advanced and efficient electronic control systems. This paper concerns with the progressing view of AMTs in the past, today and future, gives an over view of the potential dynamic problems concerned with AMTs and some control strategies used to solve those problem. This work was achieved at the Department of Mechanical Engineering, Faculty of Engineering Technology, ALI Amir Ibrahim 1,2,a, QIN Da-tong 1, ATTIA Nabil Abdulla 1,3, The State Key Laboratory of Mechanical Transmission, Chongqing University, Chongqing 400044, P.R. China Faculty Of Engineering, El Azhari University, Sudan Faculty of Engineering, Helwan University, Mataria, Egypt, Received 16 March 2004; revised 29 June 2004 The research carried out during the last few years on manual transmission systems are considered as a foundation for automatic manual transmission research, upgrading the old manual style by inserting electronic equipment and software to improve shift quality, enhance fuel economy, and develop more efficient and reliable systems. In 1970 Scania and Daimler Benz began to use half automation control mode as the first stage for AMT progress. In their model the gear shifting process was operated by electro-pneumatic system after pressing the clutch pedal. An electronic monitor gave suggestion to the driver for optimal gear shifting. American Eaton's Smart improved the previous model by adding control strategies for both the clutch and the engine. In the second stage, a full automatic control system was generated and the first product was delivered to the market by Isuzu in 1984 followed by Nissan, Ford and Renault, using throttle pedal as a controlling parameter for speed control. The third stage was an intelligent automatic control, in which Isuzu and Nissan promoted the preceding models, picking up modern control theory such as Fuzzy logic, including environmental parameters and vehicle running conditions in their models. Currently, vehicle manufactures of AMTs are focusing on the customer's demand that means better shift quality and more efficient transmission system, in addition to further reduction of fuel consumption.

European light vehicle market has low penetration of AMTs and automatic transmission in the past ten years. It has grown slowly from 8% to just over 14% because consumers are reluctant to choose automatics. In the U.S., AMT demand has grown strongly and steadily so that 84% of cars are automatic currently. In Japan, the move to automatics came later than in the U.S. mainly due to heavy traffic congestion that limits the opportunity to achieve maximum acceleration or high speed; anyway, AMTs have come to dominate the market. China enrolled in AMTs

researches in 1984 and Xing Yuan Sheng company is currently constructing an electromechanical system consists of DC motor for actuating the clutch and shifting unit for selecting and shifting processes. AMT control strategies are very important issues required to reduce fuel consumption and deliver smooth acceleration by minimizing unwanted oscillations which have adverse effects on vehicle performance.

4. METHODOLOGY

This study describes how to convert the traditional manually gear shifting mechanism to a semi-automated gear shifting mechanism. The development has concluded also the gearbox, which became much smoother and produces less noise.
This design helps the driver to increase his focusing on the road. Also reduces the time needed to engage the required reduction ratio, which increases the vehicles response. This design may be considered as an educational model for gear shifting mechanism.
So, we pointed to the Following:

- The suitable dimensions for the main components holder. Keeping in mind the addition of other parts for enhancement and development.
- A manual, 4-frontal speed gear box is used automobile drive is chosen for this design because it is easier to modify.
- An electrical motor is used to create mechanical power instead of an internal combustion engine, which is difficult to be placed there. It is also used to make the engagement process easy.
- A couple of pulley and a belt are used to transmit power from the electrical motor to the gear box.
- We will use two pneumatic double acting cylinders per gear shifter.
- One direction control valves are used to change the compressed air direction.

5. PRAPOSED CONSTRUCTION

5.1 SCHEMATIC LAYOUT

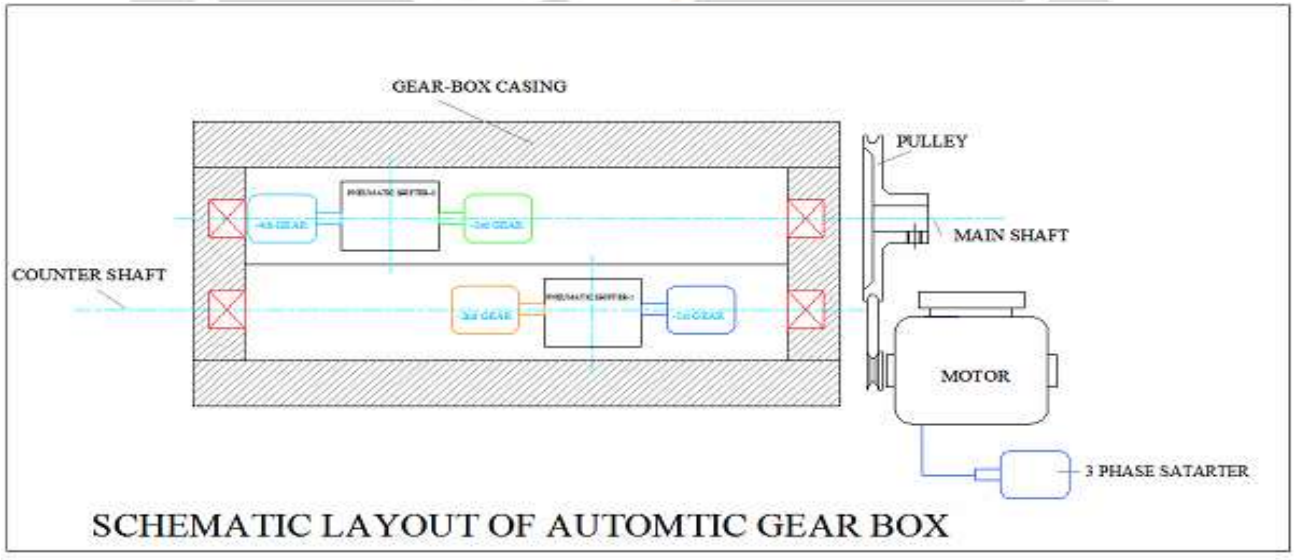

Fig:-1 Schematic layout of gear box

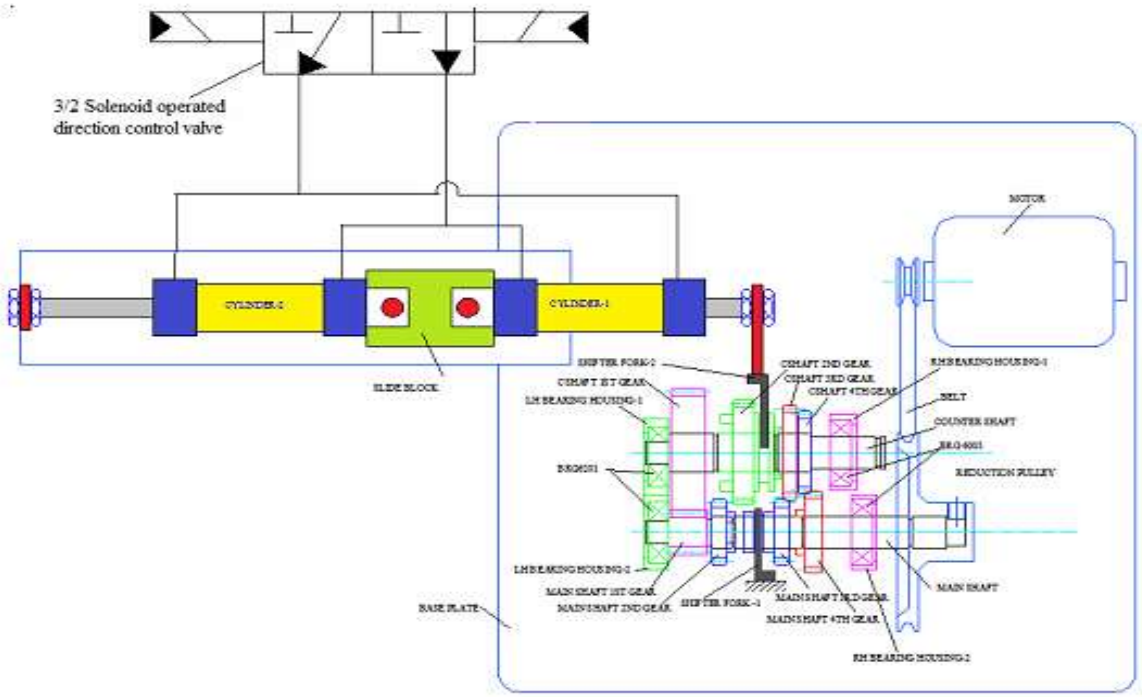

Fig 2. Circuit Diagram

The construction of the Pneumatic gear box consists of the following parts

1. Base Frame

The base frame is structural element that supports the entire gear box system. The frame carries the drive system at its lower end. The drive motor is mounted on the base frame.

2. Drive system

Drive system comprises of the single phase AC induction motor with following specifications

Singal phase AC motor
Induction motor
Power = 1/16 HP
Speed=3200 rpm.
this is used instead of the engine in the rig above.

1. motor Belt Drive : Open belt drive is used which comprises of the motor pulley, reduction pulley and v-belt.
2. Four speed gear box (The details of gear box are given in figure above)

3. Pneumatic linear actuator

The pneumatic linear actuator is Standard cylinder VDVU 16× 25. This cylinder is double acting cylinder that is operated by pneumatic valve 3/2 way. The valve is supplied compressed air from the compressor by means of a filter-regulator-lubricator (FRL) unit.

This linear actuator is used in the following positions,

a. 1st gear
b. 2nd gear
c. 3rd gear
d. 4th gear

4. Shifter mechanism

The shifter mechanism is an assemblage of levers actuated by the linear actuator as mentioned above. This shifter is normally in neutral condition; it shifts the gears at start of cycle and releases it at end of cycle.

5. Position control system

The position system comprises of the following components;

1. a. 3/2 way direction control valves : This is direction control valves supply compressed air to the either cylinder. The lever on the respective valve acts as the gear shifting button.

b. Double acting cylinders : The double acting cylinders are connected end to end , and one of the cylinder piston rods is clamped to the frame where as the other is connected to the shifter for the (1st and 2nd gear) or (3rd and 4th gear) pair.

2. Flow control valve : Flow control valve is used to regulate the pressure of air supplied to the cylinders. The details of this system are given in the circuit diagram of the Pneumatic system.

6. Cost Estimation

SR NO	NAME OF PARTS	NO OF QUANTITY	MATERIAL	COST
1	MOTOR	1	-	1500
2	GEAR BOX	1	SS & AL & CI	3800
3	PRESSURE GUAGE	1	FIBER	190
4	SOLENOID	1	FIBER	940
5	PNEUMATIC CYLINDER	2	SS	7600
6	CONNECTOR	1	CI	20
7	PULLEY	2	CI	410
8	BELT	1 (NO 34)	RUBBER	70
9	FRAME	8 KG	I	730
10	PIPE	2 M	POLYUR ETHANE CALIBRATED	15

7. CONCLUSION

The above research could be used for below objectives

- ✓ To improve the performance of the vehicle much larger than the regular gear shifting process
- ✓ To provide helps to driver to increase his focusing on the road.
- ✓ To reduces the time needed to engage the required reduction ratio, which increases the vehicle's response
- ✓ To make the Gear box much smoother
- ✓ To produce less noise
- ✓ To make the Gear shifting less confusing
- ✓ To provide the vehicle Semi-automated gear shifting mechanism

8. REFERENCES

1. Momani, Mohammed, Abuzalata, Igried A l-Khawaldeh and Hisham Al- Mujafet © Maxwell Scientific Organization, 2010, Submitted Date: March 10, 2010.
2. "United states patent" patent no. US 7,104,373 B2, date of patent: Sep 12, 2006.
3. "Design of machine elements" By V.B.Bhandari, Tata McGraw hill publication, second edition 2007.
4. P s g design data, Kalaikathir Achchagam, Coimbatore publication .
5. "Machine design" By R.S. Khurmi, J.K.Gupta, S.Chand publication, 14th edition, 2009.
6. "Pneumatic, PLC Controlled, Automotive Gear Shifting Mechanism" Muntaser.