

## Implementation of fuzzy logic in conveyor belt

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**Abstract:** Conveyor belts are mainly used in airports, industries and various security schemes. Its main purpose is to carry the goods. In modern world the usage of conveyor belt increases in different ways. Not only used in industries but also in the hotels. For security checking, tracking and scanning of goods are employed in various stations. Implementation of the Fuzzy logic techniques for Localization and tracking of items moving along a conveyor belt can be determined by rule based decision making. UHF-RFID modules are used for the localization of items. The traditional Boolean set theory helps to introduce fuzzy concept in this paper. Three dimensional view of the items have been determined here. For easy and quick implementation Fuzzy controller can be defined by process control. RFID modules provide two dimensional views of item and RFID readers sketch the item from conveyor belt

**Keywords-** Fuzzy Logic, Rule based decision making theory, UHF-RFID (Ultra High Frequency-Radio Frequency Identification).

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### I. Introduction

Inventions are the output of the unique thinking. Human being came to a conclusion for reducing their workload. We call it as Innovations. Presently the competition is very high in the field of Research and Development stream to change the world in every second. We have designed a project that to increase the efficacy of conveyor system in the sense of tracking and localization of items moving along it. Our project consists of RFID tags and Readers system, LCD display, Fuzzy logic for controlling the conveyors system and PIC microcontroller. The use of RFID systems are in real-time identification security guidance, quality tracking, intelligent transportation schemes, and many other authentication modules. Each item is tagged with a RFID and it allows moving along intelligent sensors schedule. While scanning of RFID tags at the reader it shows the results in the LCD display. Multiple items can track by the synthetic array phase technique. Passive RFID modules provide two dimensional views of item and RFID readers sketch the item from conveyor belt. Fuzzy logic is introduced to sense the items and displace it from the belt. The proposed system helps to track the item by many a time format.

### II. Existing system

A conveyor belt includes at least one rip detection sensor, one position detection sensor and a speed measurement sensor. In this paper a complete sensor solution for the industrial conveyor belt is given. In this an intelligent sensors are used having one master intelligent sensor and number of slave sensors depending upon the length of the belt. The intelligent sensors system not only increases the life of the conveyor belt but also increases overall efficiency of the system and it also reduces the processing overhead of the final units in case most of the processing is done in this sensor set by the intelligent master sensor hereby increasing not only the belt life but as well as it extends the sensor life as the conveyor belt wears.

### III. Proposed system

A new phase-based technique for localization and tracking of items moving along a conveyor belt and equipped with ultra high frequency-radio frequency identification (UHF-RFID) tags is described and validated here. The technique is based on a synthetic-array approach and a Fuzzy system that takes advantage of the fact that the tagged items move along a conveyor belt whose speed and path are known a priori. In this framework, a joint use is done of synthetic-array radar principles, knowledge-based processing, and efficient exploitation of the reader-tag communication signal. The technique can be easily implemented in any conventional reader based on an in-phase and quadrature receiver and it does not require any modification of the reader antenna configurations as are usually adopted in UHF-RFID portals.

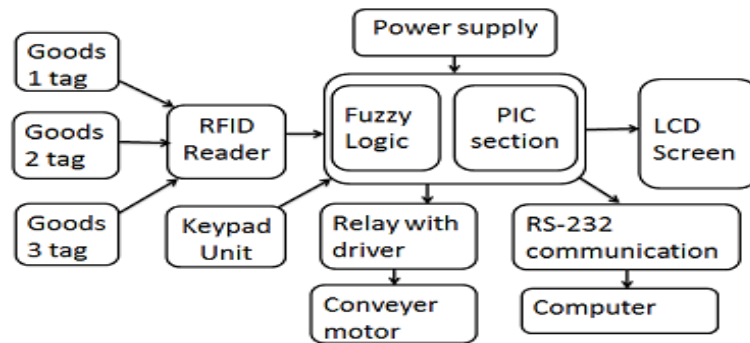


Fig3.1:FunctionalBlockdiagram

The system consists of Fuzzy logic, PIC microcontroller, RFID module, power system and Driver unit. The RFID module has two parts: RFID reader and the Tag. These are the main elements of scanning section. From the scanning section the output sends a request to the Controller part. The PIC controller accurate synchronization information from the tag and reader, then it compares the reader output. Overall processing works are undertaken by the control logic circuitry. When the goods are placed on the conveyor belt, the IR sensor receives the signal and switches it to the on mode. Fuzzy regulates the conveyor rotation and driver circuit gives the provision unit. User can acquire the output from LCD display. Through this system user can receive their baggage without any time delay.

#### IV. Results

The conveyor belt system is applicable in various streams. By using the fuzzy logic system we can control the motor according to the goods. Multi directional localization and tracking methodology is involved here.



Fig5.1:RFIDmodulekit

#### In Airports

In airports goods are switched by using the conveyor belts. It is used for the security purpose too. Conveyor belt can displace the goods and we can add extra features with RFID and Fuzzy system. These are enhanced to reduce the man work. Goods are easily exchanged to the users and an anti-collision system can be implemented in this system.



Fig5.1: Goods in conveyor belt

#### Industrial Application

In industries conveyor belts are essential element for replacing the goods according to their manufacturing status. This reduces the man work and also the availability of the workstation.



**Fig5.2:** Industrial application of conveyor belt.

## V. Conclusions

The project which we have proposed has a RFID tag on goods helps for multiple item localization at a time. The tracking and localization methodologies are based on Fuzzy concept. Decision making rule plays a major role in this project. The conveyor belts are needed mainly in the airports, and industrial applications. In further enhancement users can get the details regarding their luggage through the LCD display and GSM. Anti-collision and multidirectional scanning procedures are implemented in this system for the real-time applications.

## VI. Future Enhancement

In future enhancement we are planning to do this project with wide area features. By adding GSM and other wireless techniques it would become a wide source. Active RFID modules are helpful to enlarge the frequency range of accessibility. These tags give the three-dimensional view of tracking and localization. These are the main factors that we are planning to implement in future works.

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