A Novel Approach to Build a Generic Model of Photovoltaic Solar System Using Sound Biometric Techniques

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ABSTRACT

This chapter presents the proposed model of combination between Photovoltaic solar system resources and sound biometric techniques, to generate power energy from the sunlight using the PVS controlled by a sound biometric technique. This work contributes to research knowledge by proposing and validating a sound biometric technique for allowing to reduce the consumption of the generated power energy by turn the lights on for the public roads only when there are vehicles on the way and only for some period of time to make the driving out of harm’s way and trouble-free. The proposed and combination models between the PVS and biometric sound chip is used for generating electric power by using solar cells to convert energy from the sun light into a flow of direct current electricity, which can be used to power equipment or to recharge a battery. In addition the Sound biometric techniques can enable PVS to listen and understand their surrounding auditory environment since turning the lights on all the time will get through a lot of energy which it might be used in other significant concerns.

Keywords: Electricity Consumption, Energy Conversion, Energy Storage Device, Photovoltaic Solar System (PVS), Sound Recognition Techniques

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1. INTRODUCTION

The lights are accessible for the national public roads in Jordan to keep away from accidents and to make the driving secure and uncomplicated, but turning the lights on all hours of darkness will consume a lot of energy which it might be used in one more important issues. This chapter will introduce a photovoltaic solar system using an embedded sound recognition chip to control the lighting of street lights in public road. The system will turn the lights on only if there is a vehicle in the highway for a pre-defined period of time, and will keep the lights off for any other sound.

There are two approaches for using photovoltaic solar system using a sound biometric chip: stand alone system that requires batteries to store power for the times when the sun is not shining, this approach can be used in a public road that also has utility power as long as they are completely separated. Grid interface system by using the power from the central utility when needed and supplies extra generated power for a highway as a parallel system by the utility (Meridji et al., 2013). In this Chapter one philosophy is to use the first approach in the view of the second approach to reduce the loss of the transferred power. In addition the word photovoltaic combines two terms: photo means light and voltaic means voltage.

A photovoltaic system in this chapter uses photovoltaic cells to directly convert sunlight into electricity controlled by a sound biometric technique including the algorithms that define the Conserving Energy of Street Lights System use the Database which consists of 200 sounds of vehicles and a lot of sounds from other domains. The proposed system can be adopted for other uses to supply power lights, televisions, pumps and other appliances at our homes. The advantages of used such systems with the low-maintenance, safe and pollution free.

While one target in the next future is to build a Grid connected interface for the PV power systems for a decentralized electrical network. Power is generated closer to where it is needed such system will reduce the need to increase the capacity of transportation and distribution lines. In our view the grid connected interface system generates its own electricity and feeds its surplus power into the utility grid for later use such as a battery bank. The battery banks can be used to provide backup power when the grid goes down using a large inverter to convert DC power output into AC power which can handle many panels as in a standalone system.

This chapter is organized as follows. Section 2 presents an overview of the related techniques for combination systems. Section 3 describes the theoretical part of the proposed generic model of integration Section 4 presents a practical part of the proposed generic model of integration. A conclusion is described in Section 5.

2. OVERVIEW OF THE RELATED TECHNIQUES

Generating and Conserving Energy is one of the most important concerns in several countries in view of the piece of evidence that they have inadequate resources of energy to depend on, and they may be import all their needs of energy from other countries. Consequently, many conventions have been held push for the public to demeanor the consumption of energy. Conserving energy of public road lights using photovoltaic solar system could be used to trim down the power invoice by generating and controlling the lights of street lamps in the public road and will save a lot of energy (Meridji et al., 2013).

This section presents an overview of the related techniques used for integrated our proposed system of photovoltaic solar system and sound biometric techniques on what say called system on chip.

2.1. Photovoltaic Cells

Semiconductor material normally composed of the silicon and is used in slim wafers or ribbons in most commercially existing cells.
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