Project and Professionalism (6CS007)

Traffic Signs Recognition (Professionalism Assessment)

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Introduction

TSR (Traffic Sign Recognition) is a web app that allows vehicles or an individual to recognize traffic signs installed on the road, such as traffic signs "Speed Limit" or "Go ahead", etc. just by uploading an image.

As we have seen, the world today is growing rapidly with technology and automobiles. It has become an integral part of our daily lives. As the use of vehicles in our daily lives increases, traffic jams will occur if people do not follow the rules of traffic jams. It can cause problems for everyone along the way. Today we know there is something else, there are many traffic accidents that occur due to neglect of traffic rules and neglect of traffic signs. Road signs are designed to provide the information drivers need to drive the road well. The traffic sign recognition system helps by recognizing traffic signs and warning drivers of those traffic signs (T L, et al., 2022). This system will create a great impact in the context of social, ethical, legal, and security aspects. Despite that, let's know about these aspects in a detailed way.

1. Social Aspect

The social aspect focuses on studying issues related to social relationships between individuals from a sociological point of view. Social characteristics include people's visibility on the street, stray animals, social activities, and interactions (e.g., social rudeness, temporary social activities), and noise, all of which are people's physical activities, it interferes with (especially walking).

Every system has benefits as well as a detrimental impact on social aspects. As the research was done by (Oprea, et al., 2022) said that the main cause of road accidents was due to negligence done by drivers in recognizing traffic signs. The risk of occurring road accidents is more likely to happen in developing countries like Nepal. This system contains a feature that helps in recognizing traffic signs just by capturing the image and uploading it to the system. In this way, an individual of society can get to know the name of that particular traffic or road sign, and they can even show it to their family members and teach the meaning of that particular sign to them. This system contains almost every traffic rule, as well as types of traffic signs that help people of society to get knowledge about traffic systems. It will teach every member of society about traffic signs and rules and regulations. Students can use this system for learning purposes. The Traffic has dealt with serious and complex issues, so the following are important that all drivers are aware of traffic rules

and must fully comply with them. But the remaining traffic problem is the driver has no time responds fast. To work around this issue, we may have the following options: Give the driver an early warning signal or use it to extend this time. The required reaction will move the available time to this location easily and clearly. In both cases, the solution is to introduce ground traffic signs (Hussein, 2022).

There are some detrimental impacts of this system on society such as it will be difficult for illiterate drivers to use this system, people might get the wrong meaning of correct signs as some signs might be confusing like bumpy road and road work, etc.

2. Ethical Aspect

There always arises a question saying "what can I do?" or "what I cannot do" while working on developing systems. The ethical answer to this question given by (Kurze & Berger, 2021) is " it is the study of right and wrong in a human venture". Ethics is a set of standards that govern the behavior of members of a profession. Ethics establish core values for responsible and professional behavior community.

In other words, ethics is a system of principles, rules, or guidelines that help you decide what is good or right. Broadly speaking, ethics can be defined as a discipline that deals with good and evil, moral obligations, and obligations of entities (humans, intelligent robots, etc.). Every project in starting phase needs to be tested to know how well it is working or not. These systems do not involve any kind of testing on animals or humans. But humans can use this system for recognizing traffic signs and learning about traffic rules. It does not affect any livelihood, as well as an individual, can use it effectively. It handles the data properly and does not lead to leaking any personal data. This system only takes suggestions or, messages from users where they have to enter some of the details. The messages can be used for upgrading the system of traffic sign recognition. It does not affect anyone's personal life or the privacy of users cannot get affected through any participatory act (Rubies, 2020).

3. Legal Aspect

This section describes legal issues related to creating websites. Many of the topics covered on this page are covered in more detail. The purpose of this page is to display on one page the issues that need to be addressed when creating a website.

3.1 EU laws (General Data Protection Regulation)

According to European laws act OJ L 281, 23.11.1995, the fundamental right is the protection of personal data which results in the protection of the natural person. The right to protect personal data is not an absolute right. It is seen concerning its function in society and must be weighed against other fundamental rights according to the principle of proportionality (REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT, 2016). So the question arises here "does this system (Traffic Signs Recognition) violates GDPR laws ?". The answer is "no" . this system mainly focus on recognizing traffic signs but if users have to give any feedback or suggestion about this system, at that time users have to provide their name only which will be stored in the database later on and protected by admin username and password.

3.2 Equality Act

Since discrimination against persons with disabilities has been illegal since the Gender Equality Act of 2010 of the UK came into force, website operators are legally required to ensure that all users have access to the website. The regulations of the Equal Treatment Act apply to all service providers (Easton, 2011). This system does not reflect any kind of discrimination against people or any controversy. A person having a long-term disability like blind, mental illness, etc will not be able to use this system as the system does not get an idea of how to solve such a particular problem. This does not mean that the system developer wants to discriminate among such disabilities. The system tries to work along with the equality act.

3.3 Copyright act

Copyright refers to the legal protection of the author's work. This includes literary, written, theatrical, artistic, music, and other forms of creative expression. There are different copyright laws according to the US, UK.

3.3.1 US Copyright Laws

The basis of copyright protection in the United States is the Copyright Act of 1976. This grants authors and artists the exclusive right to copy, distribute, and display their work. Websites are subject to this protection because they contain creative elements such as written content and images (Herr, 2022).

3.3.2 UK Copyright Laws

British law is the Copyright, Designs and Patents Act of 1988. It is similar to US law in that it protects original works such as literary works, music, art, movies, and sound (Gauvin, 2021).

This system uses images of traffic signs from the internet. Some images are available freely on the internet which is used in the system. It violates copyright law, as it uses images from free sources on the internet. But the copyright laws say there is still an author or owner of that particular image. I have uses the images in the system by following the copyright law of **fair use** of an image. Fair use is an exception, a restriction on the exclusivity given to the creator of a work by copyright law. In the United States, fair use allows limited use of copyrighted material without the permission of the creator of the creative work. The purpose of fair use is to allow limited use that benefits the general public (Dwisvimiar & Ghanny, 2021).

4. Security Aspect

Security aspect includes protection of system hardware, software, and all associated interfaces. Common security needs include managing user accounts, controlling passwords, and system access (Lonetti & Marchetti, 2018).

There come many security issues while developing or running a system. Some of them are mentioned below:

4.1 SQL injection

SQL injection is a security vulnerability in web applications that allows an attacker to use application code to access or corrupt database content. If successful, an attacker can create, read, update, modify, or delete data stored in a back-end database. SQL injection is one of the most common types of web application vulnerabilities.

In my system, I will be going to use MySQL database for storing the data or information of messages and details of messages sender. The database is protected by an authentication system where the admin can only log in with the proper username and password provided. This leads to the protection of user information and their privacy will be secure.

4.2 Data Encryption

According to the U.K. government standard of 2002, encryption is the process of encrypting readable text so that it can only be read by someone who has a private code or decryption key and contributes to the data security of sensitive information (Hendi, et al., 2019).

In this system, I am not going to encrypt the user's data because I am developing this system for getting knowledge about traffic signs which will not store any kind of personal data of users except their names. It can be used by every individual without any authentication system like log in or sign up etc. They just have to visit the website and learn about traffic signs rules and regulations, types of traffic signs, as well as they, can upload an image to get the name of particular traffic or road signs.

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