

message to the local system. It is observed that, a buzzer is beeped to alarm the people working around and the robot is moved to the place where the gas leakage occurred. The IR photo-transistor present in robot detects the fire and an on board extinguisher is used to stop the fire automatically. A wireless AV camera resides at the robot, sends the robotic environment information to the local system. The video streaming is simultaneously done at both the local and 'N' number of remote system (web server). The videos are streamed using the IP camera software, this software is used to create a web page to do live streaming through the web server.

This system can be used where ever the safety and security are the major threat. In future this work may be enhanced in such a way that, whenever a picture is captured then an IP Camera can immediately send an email about the picture. And also, Wifi module may be used to increase the communication distance between the Robot and with the local system.

VI. REFERENCES

- [1] Mustafa Engin1, Dilşad Engin2. "Path planning of line follower robot"
- [2] V. Ramya, B. Palaniappan, "Embedded system for Hazardous Gas detection and Alerting", International Journal of Distributed and Parallel Systems (IJDPSS) Vol.3, No.3, May 2012.
- [3] Dani Martinez, Tomas Palleja, Javier Moreno, Marcel Tresanchez, MerceTeixido, "A Mobile Robot Agent for Gas Leak Source Detection" - Institute for BioEngineering of Catalonia, Baldiri Reixac, 10-16, 08028 Barcelona, Spain
- [4] Aarti Rao Jaladi, Karishma Khithani, Pankaja Pawar, Kiran Malvi. "Environmental Monitoring Using Wireless Sensor Networks (WSN) based on IOT"- International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 01
- [5] K Medilla & Firdaus, Firdaus & Yulianto, Andik & K Syakban, 2018, Early detection of LPG gas leakage based on Wireless Sensor Networking, https://www.researchgate.net/publication/323451555_Early_detection_of_LPG_gas_leakage_based_Wireless_Sensor_Networking/ accessed on August 26, 2019.
- [6] Premkumar M, "Unmanned Multi-Functional robot using zigbee adopter network for defense application" (IJARCET), volume2, Issue I, January 2013.
- [7] Shradha Khandekar, Sagar Mergal, Gita Lonkar, Prof A S Zadhuke, "Review on web cam robot using zigbee", (ISSN), E&TC Dept of SBPOCE, Indapur, volume 3, January 2016.
- [8] Hsian-I Lin, Yu-Cheng Liu, "Evaluation of Human-Robot Arm Movement Imitation", Nat. Taipei university of Technol., Taipei, Taiwan, IEEE, May 2016.
- [9] V. Ramya, B. Palaniappan, K. Karthik and Subash Prasad "Embedded System for vehicle cabin toxic gas detection and alerting", Journal of Elsevier Procedia Engineering, 30(2013).
- [10] Heng -Tze Cheng, Zheng, Pei Zhang, "Real-Time Imitative Robotic Arm Control for Home Robot Applications", Carnegie Mellon University, IEEE, March 2015.
- [11] Cherubini, "Development of a multi-mode navigation system for an assistive robotics project", IEEE International Conference on Robotics and Automation, Rome, Italy, 10-14 April 2014.
- [12] Edward B. Panganiban "Automated Hazardous Gas Detecting Robot using Wireless Sensor Networks with GSM-SMS Alert and Fire Control System for Households" Article in International Journal of Advanced Trends in Computer Science and Engineering. June 2019. <https://doi.org/10.30534/ijatcse/2019/72832019>.