A Critical Evaluation of Visible Light Communication

Wenrui Zou 2253589

Information and Computer Science, Xi'an Jiaotong-Liverpool University, Suzhou, China

INTRODUCTION

Fig. 1. Application of VLC

- Definition : In VLC, Information is transmitted through the modification of light sources
- Such as LEDs or fluorescent lamps.
- Application: Internet of Things (IoT), smart homes, healthcare, intelligent transportation
- Attributes: Efficiency, Security, and Eco-friendliness

OPERATIONAL PRINCIPLES

General Principles

- Optical communication technology
- An optical receiver to demodulate the optical signal

Special Principles

- Synchronization identification and detection signals added when needed

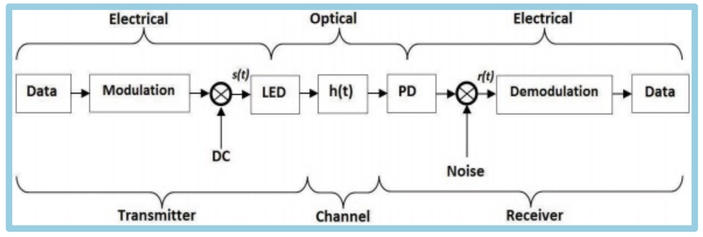

Fig. 2. Model of VLC communication system.

CRITERIA & EVALUATION

CRITERIA

- **Security**
- Data confidentiality, integrity, and reliability.

- **Speed**
- Increased speed, which opens up new opportunities for secure and fast data transmission.

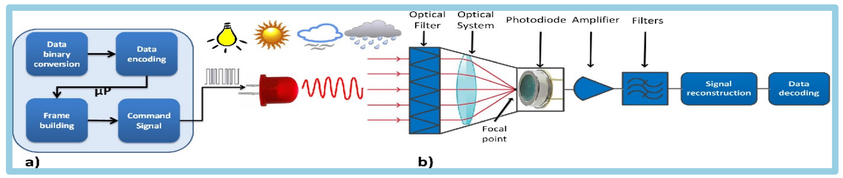

Fig. 3. Security system of VLC

EVALUATION

Security

- **Strengths**
  - Ensuring during transmission, unauthorized parties cannot access, steal, or manipulate with data.
- **Weaknesses**
  - High level of secrecy is merely relative.
  - Particularly in public areas.

Speed

- **Strengths**
  - Flexibility in wireless communication
  - High speed in optical communication.
  - Accomplish Gbps-level high-speed data delivery.
- **Weaknesses**
  - The application range were constrained by data rate
  - Route losses
  - Restriction of high data rate

LIMITATIONS & SOLUTIONS

LIMITATIONS

- Insufficient sample sizes or restricted references.
- Insufficient comprehensive research data

SOLUTIONS

- Collect more research data
- Enhance public environment security features
- Broaden application scope

REFERENCE LIST

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