

Free Space Optical Communication (FSOC) Nation

Development of a Device to Establish a Wireless Ethernet Connection.

Alex Amaya, Juan Bonilla, Ankita Jaswal, Giovanne Villanueva
College of Engineering and Computer Science



PROBLEM STATEMENT

Not everybody in the world has access to the internet which creates a digital divide, leaving people in poverty behind the curve.

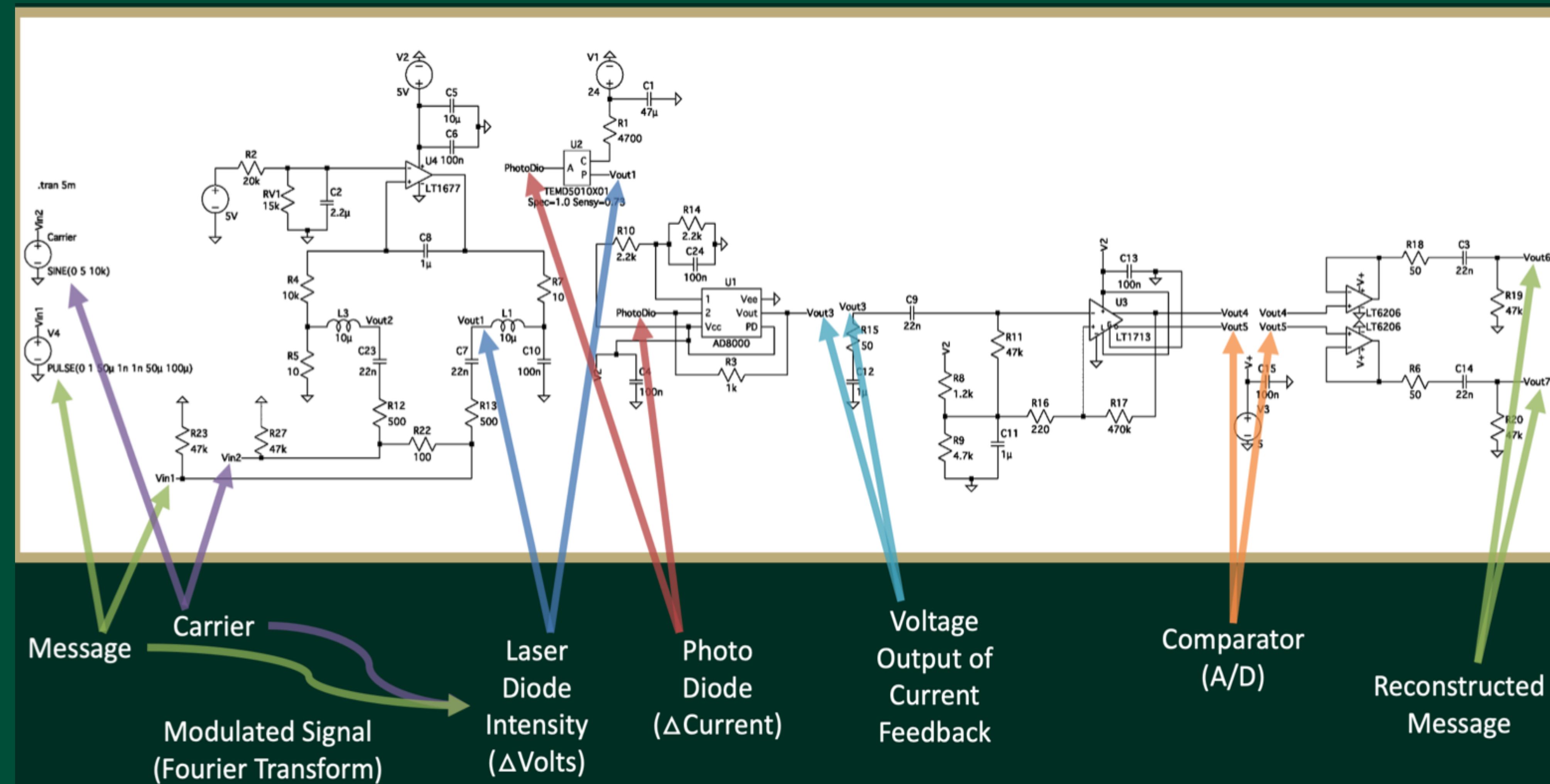


Figure 1: Device LTSpice Schematic

BACKGROUND

Internet accessibility has become integral to our daily lives. More so in today's environment since a global pandemic has forced us into self-quarantine. Unfortunately, however, a discrepancy is growing within our societies: those with ready access to the internet and those in underserved locations who don't. Inadvertently, this is leaving those without internet behind and with less opportunities accessible to them.

SUMMARY OF WORK

Our device is in the workings of establishing a wireless ethernet connection to transmit and receive 10Mbps of data over a 2-meter distance. Not only will it be cost effective, but it will also be capable of fast deployment. In other words, it needs to be portable in case of emergencies. Figure 2 shows our device prototype with 5x5 cm dimensions mounted on a wooden base. Last of all, it includes a localized online web database to keep track of connections established as shown in Figure 3.

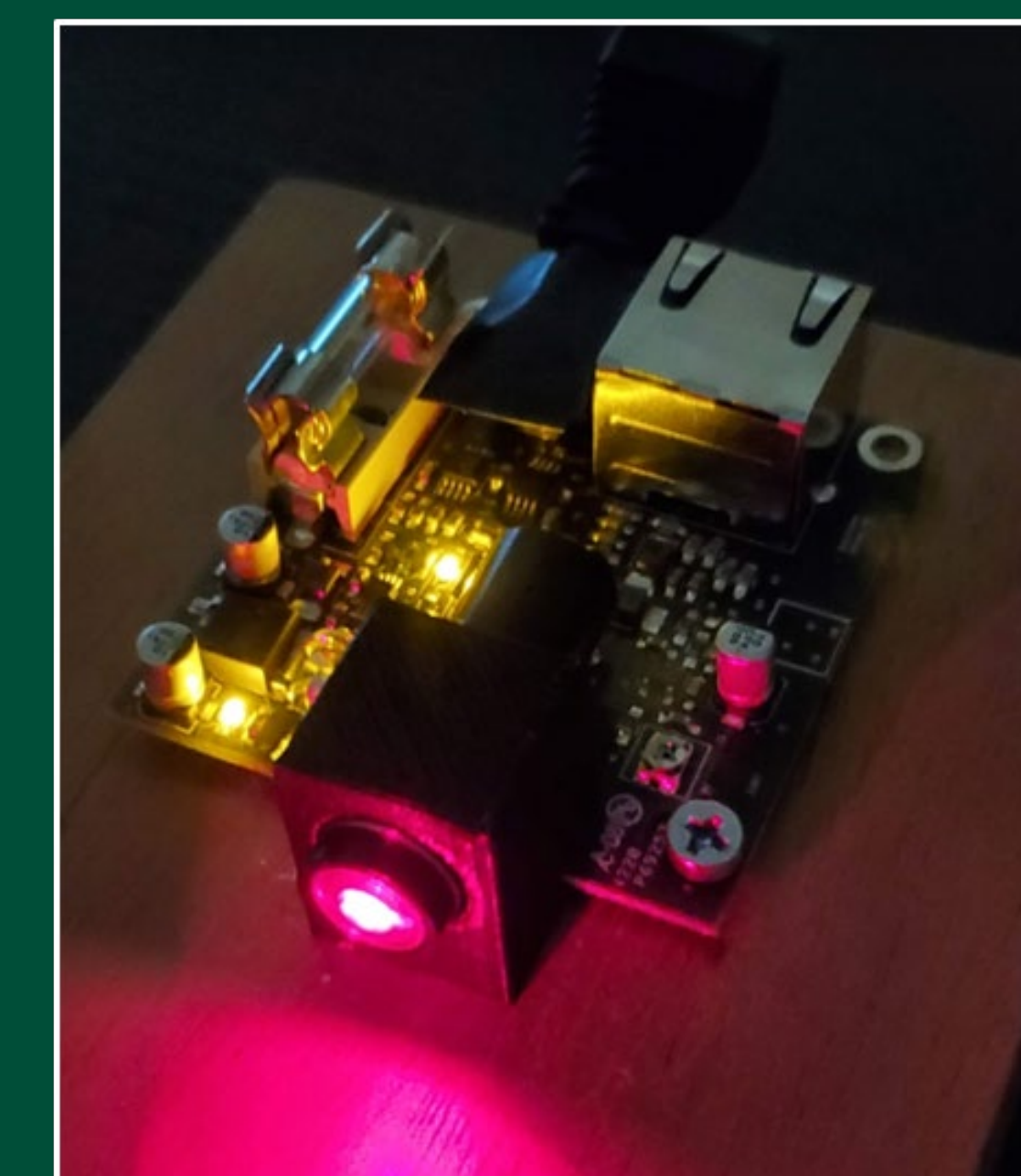


Figure 2: FSOC Prototype



Figure 3: Online Web Database

IMPACT ON COMMUNITY

1. The online database is a supporting feature to quickly spot errors and connections established with our FSOC device.
2. Slash deployment costs compared to traditional cabled networks.
3. Makes it possible to establish networks in geographical locations where laying cable just isn't possible.
4. Has the benefits of ultra-wideband communications. Specifically, high bandwidths and security.