

IST-057
Free-space Optical (FSO) Networks for Mobile Robot Teams

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Abstract

This proposal request funds for graduate and undergraduate student stipends to support preliminary research in free-space optical (FSO) networks for use on mobile robot teams. While FSO technology in static configurations has been commercialized, its use in mobile applications has been to this point limited. However, it has the potential to offer tremendous increases in network throughput for mobile platforms. Such capabilities could prove invaluable for use in disaster relief, robot assisted emergency response, and DHS/DOD applications such as remote surveillance and monitoring, secure battlefield transmissions, and Identify Friend or Foe (IFF) technology to reduce friendly-fire casualties.

The scope of this project consists of the development of a hierarchical, hybrid vision/FSO based Link Acquisition System (LAS) for establishing and maintaining the optical link during mobile operations. All results will be validated in experiment using a pair of all-terrain robots equipped with 100 Mbps FSO transceivers and long-range vision systems.