Pengembangan dan analisa smart monitoring and emergency system (SMES) untuk pemantauan pergerakan pendakian gunung guna mengantisipasi kebutuhan percepatan evakuasi ketika terjadi kecelakaan = Development and analysis smart monitoring and emergency system (SMES) for monitoring mountaineer movement to speed up evacuation needs when accident happens

Valda Orchidea Zahwa, author

Abstrak

Meningkatnya intensitas pendakian di Indonesia tidak dibarengi dengan adanya peningkatan keamanan dan keselamatan pendaki. Pengetatan izin dilakukan dengan mewajibkan pendaki meninggalkan identitas di pos perijinan dan melakukan pengecekan perbekalan pendaki. Apabila pendaki belum turun sesuai izin pendakian yang ditentukan maka dapat diperkirakan telah terjadi kendala. Tugas Akhir ini mengembangkan Prototype SMES (Smart Monitoring and Emergency System). SMES adalah teknologi yang memanfaatkan teknologi nirkabel LoRa (Long Range) yang memiliki cakupan luas dengan konsumsi power yang kecil serta dilengkapi dengan node di setiap pos dan Gateway di pos perijinan. Dengan alat tersebut maka pendaki yang menggunakan tracking tools berbasi GPS akan otomatis terhubung pada sistem sehingga lokasi pendaki dapat dideteksi. SMES juga dilengkapi dengan tombol darurat untuk mempermudah pendaki dalam memberikan informasi ketika terjadi kondisi darurat tanpa harus melapor ke pos perizinan. SMES diharapkan dapat membantu tim SAR (Search and Rescue) dalam melakukan evakuasi dengan cepat dan tepat. SMES telah diuji coba di area Universitas Indonesia dengan 3 skenario berbeda yang mewakili kondisi pada area pendakian gunung.Skenario Line of Sight memiliki rata-rata RSSI -69,31 dBm dengan jangkauan 679 m, skenario non-Line of Sight mendapatkan rata-rata RSSI -76dBm dengan jangkauan 364 meter, dan skenario Top Down memiliki rata-rata RSSI -73dBm dengan jangkauan 1030 meter.

.....Increased intensity of moutaineers in Indonesia is not accompanied by an increase security and safety of mounteineers. Tightening of permits is done by requiring the mountaineer to leave the identity at the security post and to check the mountaineers supplies. If the climber has not gone down according to the specified climbing permit then it can be estimated that there has been a problem. This thesis discusses the Prototype of SMES (Smart Monitoring and Emergency System) which is a technology that utilizes Wireless Broadband Network LoRa (Long Range) technology with a small power consumption and equipped with node in every post and gateway in security post. With the tool then the mountaineer who uses a tracking tools completely with GPS (Global Positioning System) will automatically connect to the system so that the location of the mountaineer can be detected. And the tools is equipped with emergency buttons to facilitate mountaineer in providing information when an accident occurred without having to report to the permitions post. It can help the Search and Rescue team in doing evacuation quickly and accurately. SMES has been tested in Universitas Indonesia area with 3 different scenarios representing conditions on mountain climbing area. The scenario of Line of Sight has an average of RSSI -69.31 dBm with a distance of 679 m, non Line of Sight scenario has an average RSSI -76dBm with a range of 364 meters, and the Top Down scenario has an average RSSI -73dBm with a range of 1030 meters.