VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI

A PROJECT REPORT ON

SECURE DATA TRANSMISSION IN MOBILE AD-HOC NETWORK USING MULTI-PATH ROUTING TECHNIQUES

Submitted in partial fulfillment for the award of Degree in

BACHELOR OF ENGINEERING

IN

INFORMATION SCIENCE AND ENGINEERING

By

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CERTIFICATE

This is to certify that the project entitled **"SECURE DATA TRANSMISSION IN MOBILE AD-HOC NETWORK USING MULTI-PATH ROUTING TECHNIQUES"** has been successfully completed by

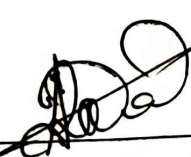|	
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the bonafide students OF **DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING,** Alva's Institute of Engineering and Technology, Moodbidri affiliated to **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the academic year 2023–24. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed in partial fulfillment of awarding Bachelor of Engineering degree.

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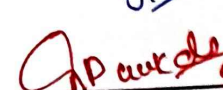
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ABSTRACT

In mobile ad-hoc networks (MANETs), ensuring secure data transmission is paramount due to the dynamic and decentralized nature of the network topology. Multi-path routing techniques have emerged as a promising solution to enhance the reliability and security of data transmission in MANETs. This system will explore the integration of multi-path routing techniques to achieve secure data transmission in MANETs. The key objectives include enhancing data confidentiality, integrity, and availability while mitigating the vulnerabilities associated with single-path routing. By leveraging multiple paths between source and destination nodes, multi-path routing techniques can distribute data traffic, reduce congestion, and improve overall network performance. Moreover, the redundancy provided by multiple paths enhances fault tolerance and resilience against node failures and malicious attacks. To ensure secure data transmission, cryptographic mechanisms such as encryption, authentication, and key management are integrated into multi-path routing protocols. These mechanisms safeguard data against eavesdropping, tampering, and unauthorized access, thereby preserving the confidentiality and integrity of transmitted information. This system will discuss various multi-path routing protocols tailored for MANETs, such as AOMDV (Ad-hoc On-demand Multipath Distance Vector) and OLSR (Optimized Link State Routing), and their respective security enhancements. Additionally, it will highlight research challenges, such as overhead concerns, routing optimization, and adaptability to dynamic network conditions, along with potential future directions for advancing secure data transmission in MANETs using multi-path routing techniques.