

Visvesvaraya Technological University
BELGAVI, KARNATAKA - 590 014.



Technical Report
On

***“Toward 5G Edge Computing for Enabling Autonomous
Aerial Vehicles”***

Submitted By

SNEHA MANJUNATH [4PM19CS090]

Submitted in partial fulfillment of the requirement for the award of degree of

**BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING**

Under the Guidance
of

Ms. Suchitra H L. M.Tech
Assistant Professor, Dept. of CS & E.
PESITM, Shivamogga



PES Institute of Technology and Management
Department of Computer Science & Engineering
MARCH-2023

PES Institute of Technology & Management

NH-206, Sagar Road, Shivamogga-577 204

(Affiliated to Visvesvaraya Technological University, Belgavi)

Department of Computer Science and Engineering



CERTIFICATE

This is to certify that the Technical Report work carried out by Ms. SNEHA MANJUNATH(4PM19CS090), a bonafide students of PES Institute of Technology and Management, Shivamogga in partial fulfillment for the final year Bachelor of Engineering in Computer Science and Engineering of Visvesvaraya Technological University, Belgavi in the year 2023.

GUIDE

Ms. Suchitra H L. M.Tech

Assistant Professor, Dept. of CS&E.
PESITM, Shivamogga.

COORDINATOR

Dr. Sunitha B S. M.Tech, Ph.D

Associate Professor, Dept. of CS&E.
PESITM, Shivamogga.

HEAD OF THE DEPARTMENT

Dr. Arjun U M.Tech, Ph.D

Associate Professor and Head, Dept. of CS&E
PESITM, Shivamogga.

Name of Examiners

1.....

2.....

Signature with date

.....

.....

ACKNOWLEDGEMENT

I take this opportunity to express my deep sense of gratitude to my guide **Ms.Suchitra.H.L** Assistant Professor, Department of CS&E, PESITM, Shivamogga for her kind support, guidance and encouragement throughout the course of this dissertation work.

I would like to express my sincere gratitude to **Dr. Sunitha B.S.** Associate Professor & **Ms. Vinutha H.M.** Asst. Professor and Technical Coordinator, Department of CS&E, PESITM, Shivamogga for her keen interest and invaluable support throughout the course of this work.

I am highly grateful to **Dr. Arjun U** Assoc. Prof. and Head, Department of CS&E, PESITM, Shivamogga for his kind support and encouragement throughout the course of this work.

I am highly grateful to **Dr. Chaitanya Kumar V.,** Principal, PESITM, Shivamogga for providing me an opportunity to fulfill my most cherished desire of reaching my goal.

I would like to thank all the teaching and non-teaching staff of Department of CS&E for their kind Co-operation during the course of the work. The support provided by the College and Departmental library is gratefully acknowledged.

Finally, I am thankful to my parents and friends, who helped me in one way or the other throughout my Technical Report work.

- Sneha Manjunath

ABSTRACT

The Technical Study explores the use of cellular network technologies, specifically 5G, for offloading time-critical control operations of unmanned aerial vehicles (UAVs) to an edge server acting as a ground control station. The study focuses on analyzing the low-latency needs of a closed-loop control system that is tested on a real 5G network, as well as practical limitations, integration challenges, intended cellular architecture, and key performance indicators. The research aims to demonstrate the feasibility of using cellular networks for UAV control operations, which could offer advantages in terms of data rates, latency, and coverage compared to other wireless technologies.