



Department of Computer Engineering

**Dr. D. Y. Patil Institute of Technology, Pimpri,**

**Pune**

**(2021-2022)**

**A Seminar Report**

**On**

**“The Path Towards Resource Elasticity for 5G Network  
Architecture”**

Submitted to the

Savitribai Phule Pune University

In partial fulfilment for the award of the Degree of

Bachelor of Engineering

In

Computer Engineering

**Bharat Korade**

Under the guidance of

**Dr.S.V.Chobe**

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Dr. D. Y. Patil Institute of Engineering ,  
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## **CERTIFICATE**

This is to certify that Bharat Sudam Korade from **Third Year Computer Engineering** has successfully completed his / her seminar work titled “The Path Towards Resource Elasticity for 5G Network Architecture” at Dr. D. Y. Patil Institute of Technology, Pimpri, Pune in the partial fulfillment of the Bachelor’s Degree in Engineering.

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## **ABSTRACT**

Vertical markets and industries are addressing a large diversity of heterogeneous services, use cases, and applications in 5G. It is currently common understanding that for networks to be able to satisfy those needs, a flexible, adaptable, and programmable architecture based on network slicing is required. Moreover, a softwarization and cloudification of the communications networks is already happening, where network functions (NFs) are transformed from monolithic pieces of equipment to programs running over a shared pool of computational and communication resources. However, this novel architecture paradigm requires new solutions to exploit its inherent flexibility. In this paper, we introduce the concept of resource elasticity as a key means to make an efficient use of the computational resources in 5G systems. Besides establishing a definition as well as a set of requirements and key performance indicators (KPIs), we propose mechanisms for the exploitation of elasticity in three different dimensions, namely computational elasticity in the design and scaling of NFs, orchestration-driven elasticity by flexible placement of NFs, and slice-aware elasticity via cross-slice resource provisioning mechanisms. Finally, we provide a succinct analysis of the architectural components that need to be enhanced to incorporate elasticity principles

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