

# **An energy-efficient clustering and routing design using cross-layer architecture to enhance network lifetime.**

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## **Doctor of Philosophy**

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By

**Ms. Savitha S**

USN: 1CR15PEJ15

Under the Guidance and Co-Guidance of

**(Research Supervisor)**

**Dr. SC Lingareddy**

Professor and HOD,  
Department of Computer Science and Engineering,  
Sri Venkateshwara College of Engineering.

**(Co-Supervisor)**

**Dr Sanjay R Chitnis**

Dean, Computer Science and  
Engineering.  
RV University.



**Research Centre: Department of Computer Science and Engineering**

**CMR INSTITUTE OF TECHNOLOGY**

**132, AECS Layout, ITPL Road,  
Kundalahalli, Bangalore - 560037**