Abstract

The significance & stature of the P vs NP problem is so imperative that even the failed attempts at proof have furnished unprecedented breakthroughs and valuable insights. While the scientists and researchers do not expect the problem to be solved in foreseeable future, the P vs NP question has been the harbinger of advancement of the theory of computation and complexity theory in particular. Multitude of research papers have been published on number of topics which have begged numerous accolades and awards. This paper presents and highlights a non-technical review of series of complex mathematical research and enlists the notable awards & advances from each subsequent effort. The paper also presents the limitations of existing and proposed techniques and highlights the direction of active future research towards P vs NP solution.

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**Index Terms**

Computer Science  

Information Sciences

**Keywords**

P vs NP, Cryptography, Complexity theory, P vs NP attempts and limitations, Geometric complexity theory, quantum computing, One-way function, incompleteness theorem.