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It is further certified that the student has fulfilled all the requirements of Comprehensive, Candidacy and State Of The Art Seminar(SOTA).

**Dr. Sanjay K. Singh**

**Associate Professor**

**Department of Computer Science and Engineering**

**Indian Institute of Technology**

**(Banaras Hindu University)**

**Varanasi-221005, India**

*June 2017*



## DECLARATION BY THE CANDIDATE

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I, DURGESH SINGH certify that the work embodied in this thesis is my own bonafide work and carried out by me under the supervision of Dr. Sanjay K. Singh from July-2013 to July-2016, at the Department of Computer Science and Engineering, Indian Institute of Technology (BHU) Varanasi. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not willfully lifted up any other's work, paragraphs, text, data, results, etc., reported in journals, books, magazines, reports dissertations, theses, etc., or available at websites and included them in this thesis and cited as my own work.

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## CERTIFICATE BY THE SUPERVISOR

It is certified that the above statement made by the student is correct to the best of my/our knowledge.

**Signature of Supervisor**

**(Dr. Sanjay K. Singh)**

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