

CANDIDATE'S DECLARATION

I, **Nishant Kumar Singh**, certify that the work embodied in this Ph.D. thesis is my own bonafide work carried out by me under the supervision of **Dr. Sanjay Kumar Rai** and co-supervision of **Dr. Nilanjan Mallik** and **Dr. S. K. Panda** for a period of about 5 years 8 months from September 2011 to May 2017 at **School of Biomedical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi**. The matter embodied in this Ph.D. thesis has not been submitted for the award of any other degree/diploma.

I declare that I have faithfully acknowledged, given credit to and referred to the research workers wherever their works have been cited in the text and the body of the thesis. I further certify that I have not willfully lifted up some other's work, paragraph, text, data, results, etc., reported in the journals, books, magazines, reports, dissertations, thesis, etc., or available at web-sites and included them in this Ph.D. thesis and cited as my own work.

Date:

Place: IIT (BHU), Varanasi

(Nishant Kumar Singh)

CERTIFICATE FROM THE SUPERVISOR & CO-SUPERVISORS

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

Dr. Sanjay Kumar Rai
(Supervisor & Coordinator)

Dr. Nilanjan Mallik
(Co-supervisor)

Dr. S. K Panda
(Co-supervisor)