



**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

**(A State Government University)**

**Thiruvananthapuram, Kerala, India - 695 016**



*The Board of Governors of  
APJ Abdul Kalam Technological University*

*hereby confers the degree of  
Doctor of Philosophy  
of the University*

*on*

**NELWIN RAJ N R**

*for successfully completing the prescribed  
programme of Study and presenting the  
thesis entitled*

**COMPUTER GENERATED HOLOGRAM BASED IMAGE  
AUTHENTICATION USING MATRIX OPTIMIZATION  
TECHNIQUES**

*This award is effective from 5<sup>th</sup> of July, 2022*

*Given this day the 17<sup>th</sup> of January, 2023*

*Under the seal of the University*

**Register Number : D-SCT16JAN002**



*C. S. Thomas*  
**Vice-Chancellor**



Authorized Signatory  
APJ Abdul Kalam Technological University  
Date: Wed Mar 15 10:40:08 IST 2023