



Department of Computer Science & Engineering

Tezpur University

Napaam, Tezpur- 784028, Assam, India.

Dr. Arindam Karmakar
Asst. Professor

Phone: 03712-275120
E-Mail : arindam@tezu.ernet.in

CERTIFICATE

This is to certify that the dissertation entitled “*Covering Points on the Grid by Circles : A Geometric Approach for Lossless Image Compression*” submitted by **Pravash Ranjan Swain** bearing Roll No: **CSI12006** is an authentic research work carried out by him under my personal supervision and guidance for partial fulfilment of the requirements and the regulations for the award of the degree of *Master of Technology* with specialization *Information Technology* during the session 2012-14 at Tezpur University, Tezpur.

To the best of my knowledge, the matter embodied in the thesis has not been reproduced elsewhere or submitted to any other university/institute for the award of any Degree or Diploma.

A handwritten signature in blue ink, appearing to read 'Arindam Karmakar', written over a horizontal line.

Signature of Supervisor

(Dr. Arindam Karmakar)



Department of Computer Science & Engineering

Tezpur University

Napaam, Tezpur- 784028, Assam, India.

Dr. Shyamanta M Hazarika
Professor and Head

Phone: 03712-275354
E-Mail : smh@tezu.ernet.in

CERTIFICATE

This is to certify that **Pravash Ranjan Swain** bearing **Roll No: CSI12006** has prepared the dissertation entitled "*Covering Points on the Grid by Circles : A Geometric Approach for Lossless Image Compression*".

The dissertation is the result of his effort and endeavour. He has worked under the supervision and guidance of **Dr. Arindam Karmakar**, Asst. Professor, Department of Computer Science & Engineering, Tezpur University. The dissertation is found worthy of acceptance for the award of the degree of *Master of Technology* with specialization *Information Technology* during the session 2012-14 at Tezpur University.


Signature of HOD

(Dr. Shyamanta M Hazarika)

Head
Department of Computer Science & Engineering
Tezpur University



Department of Computer Science & Engineering

Tezpur University

Napaam, Tezpur- 784028, Assam, India.

Phone: 03712-267109

Extension: 03712-267007/8/9

E-Mail : cs@tezu.ernet.in

CERTIFICATE

The dissertation entitled "*Covering Points on the Grid by Circles : A Geometric Approach for Lossless Image Compression*" submitted by **Pravash Ranjan Swain** bearing **Roll No: CSI12006** for partial fulfilment of the requirements for the degree of *Master of Technology* with specialization *Information Technology* at Tezpur University has been examined.

Handwritten signature of the Internal Examiner.

Internal Examiner

Date: 26/05/14

Handwritten signature of the External Examiner.

External Examiner

Date: 26-05-14

Professor

Department of Computer Science & Engineering
Tezpur University

**EXTERNAL
EXAMINER**

Declaration

I hereby declare that the thesis entitled *Covering Points on the Grid by Circles : A Geometric Approach for Lossless Image Compression* submitted to the Department of Computer Science and Engineering under the School of Engineering, Tezpur University, in partial fulfilment of the requirements for the award of the degree of Master of Technology is based on bonafide work carried out by me. The results embodied in this thesis have not been submitted in part or in full, to any other university or institute for award of any degree or diploma.



Pravash Ranjan Swain

Roll No: CSI12006

M. Tech (Information Technology)

Dept. of CSE, Tezpur University

Acknowledgement

It is my great pleasure to show due regards to persons involved in bringing out my successful completion of the project work entitled *Covering Points on the Grid by Circles : A Geometric Approach for Lossless Image Compression* undertaken by me as a prerequisite towards partial fulfilment for the award of M.Tech in Information Technology at Tezpur University.

It would not be possible for me to achieve the success with my effort alone. There were a lot of people who extended their supportive hands towards me in the way of making my work a success. First of all my heartiest gratitude goes to my project guide *Dr. Arindam Karmakar*, Asst. Professor of Computer Science & Engineering, Tezpur University for his excellent guidance and valuable suggestion during the course project. I thank *Dr. Shasank Roy*, Professor, Chennai Mathematical Institute (CMI) for his valuable guidance during my visit to CMI. My sincere thanks to all faculty members of my department for their support during this project.

Last but not the least I am also thankful to my class mates and juniors for their kind cooperation during the entire process. I would like to acknowledge everyone who contributed directly or indirectly for the fulfilment of this project work.

I dedicate this thesis to those who believed in me, my parents and family.

Pravash Ranjan Swain