

# Curriculum Vitae

Sangita Jha

---

## CONTACT INFORMATION

Department of Mathematics  
National Institute of Technology (NIT) Rourkela  
Rourkela, Odisha-769008, India  
Email: sangitajha285@gmail.com,jhasa@nitrkl.ac.in

## PERSONAL DETAILS

Gender: Female  
Date of Birth: 28/12/1991  
Nationality: India  
Languages: Bengali (Mother Tounge), Hindi and English.

## EXPERIENCES

1. Assistant Professor Grade-II, NIT Rourkela (March 5, 2020- present)
2. Assistant Professor, VIT Vellore, Tamil Nadu (July 3 - November 30, 2019)
3. Institute Postdoc Fellow, IIT Guwahati (December 3, 2019 - March 4, 2020)
4. Institute Prepostdoctoral Fellow, IIT Madras (January 11 to July 2, 2019)

## EDUCATION

<b>Indian Institute of Technology Madras</b> , Chennai Ph.D. in Mathematics CGPA in coursework : 9.23/10	<b>2019</b>
<b>Indian Institute of Technology Guwahati</b> , Guwahati M.Sc. in Mathematics and Computing CGPA : 8.71/10	<b>2014</b>
<b>Berhampore Krishnath College (University of Kalyani)</b> , Berhampore, Murshidabad B.Sc. in Mathematics (Honours) Aggregate : 72.1% Aggregate in Mathematics : 79%	<b>2012</b>
<b>Beldanga C.R.G.S High School (H.S.)</b> , Beldanga, Murshidabad Higher Scndary Examination (H.S.) Aggregate : 81.2% Aggregate in Mathematics : 96%	<b>2009</b>
<b>Sarat Palli Balika Vidyalaya</b> , Beldanga, Murshidabad Secondary Examination Aggregate : 83.75% Mathematics : 81%	<b>2007</b>

RESEARCH INTEREST	Fractal Interpolation, Approximation Theory, Numerical Analysis, Farctal Geometry.
THESIS DETAILS	Thesis Title: A Study on Jackson and Fractal Approximations. Thesis Supervisors: Prof. A.K.B. Chand (IIT Madras) and Prof. M.A. Navascues (University of Zaragoza, Spain). Date of submission: 11/01/2019. Date of Defense: 14/05/2019.
M.Sc. PROJECT	Completed M.Sc. project titled “Representations of Holomorphic and Meromorphic Functions” under the guidance of Dr. A. K. Chakraborty at IIT Guwahati in 2014.
TEACHING INTEREST	Approximation Theory, Numerical Analysis, Fractal Geometry, Integral Equation, Fixed Point Theory, Linear Algebra, Complex analysis, Measure Theory.
HONOURS AND ACHIEVEMENTS	<ul style="list-style-type: none"> <li>• Awarded Faculty Advisor Appreciation by NIT Rourkela, 2022-2023.</li> <li>• Awarded International Travel Grant by SERB for Attending the Conference IWOTA 2023, July 31-August 4 (Not availed).</li> <li>• Awarded Institute Postdoctoral Fellowship by IIT Guwahati in 2019-20.</li> <li>• Awarded Institute Prepostdoctoral Fellowship by IIT Madras for successfully submitting Ph.D. thesis within four and half years (2019).</li> <li>• Received Research Scholar Travel Grant and Alumni Grant from IIT Madras to attend a conference in Spain in 2017.</li> <li>• Secured an All India Lectureship Rank 51 in CSIR-NET exam in Mathematics (<b>2015</b>).</li> <li>• Secured an All India Rank 66 (out of about 3840 candidates) in GATE 2014 in Mathematics and consequently awarded Half Time Research Assistantship by IIT Madras to pursue the Ph.D. programme in Mathematics (<b>July 2014 onwards</b>).</li> <li>• Selected for Summer School Mathematics Training and Talent Search Programme at SVNIT, Surat (<b>2013</b>).</li> <li>• Awarded Institute Merit Scholarship by IIT Guwahati (<b>2012-2014</b>).</li> <li>• Secured an All India Rank of 162 (out of about 5000 candidates) in the Joint Admission Test for M.Sc. (JAM) conducted by the IITs (<b>2012</b>).</li> <li>• Awarded Merit Scholarship by West Bengal Government of Higher Education (<b>2007-2012</b>).</li> </ul>
PUBLICATIONS	<ol style="list-style-type: none"> <li>1. M.A. Navascues, Sangita Jha, A.K.B. Chand and M.V. Sebastian, Fractal Approximation of Jackson Type for Periodic Phenomena, <b>Fractals</b>, 26(5), 1850079, 2018, DOI/10.1142/S0218348X18500792.</li> <li>2. M.A. Navascues, Sangita Jha, A.K.B. Chand and M.V. Sebastian, Generalized Trigonometric Interpolation, <b>Journal of Computational and Applied Mathematics</b>, 354, 152-162, DOI:10.1016/j.cam.2018.08.003, 2018 .</li> <li>3. A.K.B. Chand, Sangita Jha, and M.A. Navascues, Kantorovich-Bernstein <math>\alpha</math>-Fractal Function in <math>\mathcal{L}^p</math> Spaces, <b>Quaestiones Mathematicae</b>, 43(2), 227-241, 2020, DOI:10.2989/16073606.2019.1572664.</li> <li>4. M.A. Navascues, Sangita Jha, A.K.B. Chand and M.V. Sebastian, A Fractal</li> </ol>

- Class of Generalized Jackson Interpolants, **Computational and Mathematical Methods**, 2019, DOI: <https://doi.org/10.1002/cmm4.1054>.
5. Sangita Jha, A.K.B. Chand, M.A. Navascues and Abhilash Sahu, Approximation Properties of Bivariate  $\alpha$ -Fractal Functions and Dimension Results, **Applicable Analysis**, 2020.
  6. Sangita Jha, A.K.B. Chand and M.A. Navascues, Approximation by Shape Preserving Fractal Functions with Variable Scaling, **Calcolo**, 58(8), 2021.
  7. Sangita Jha, A.K.B. Chand and M.A. Navascues, Generalized Bivariate Hermite Fractal Interpolation Function, **Numerical Analysis and Application**, 24(2), 117-129, 2021.
  8. S.K. Katiyar, A.K.B. Chand and Sangita Jha, Parameter Identification of Constrained Data by a New Class of Rational Fractal Function, **Numerical Analysis and Application**, 24(3), 261-276, 2021.
  9. Sangita Jha, S. Verma, Dimensional analysis of  $\alpha$ -fractal functions, *Results in Mathematics*, 76(4), 1-24, 2021.
  10. Sangita Jha, M.A. Navascués, A.K.B. Chand, Bases consisting of self-referential functions in Banach spaces, *Aequationes Mathematicae*, 96(5), 1053-1073, 2022.
  11. Sangita Jha, S. Verma, A.K.B. Chand, Non-stationary zipper  $\alpha$ -fractal functions and associated fractal operator, *Fractional Calculus and Applied Analysis*, 25(4), 1427-1452, 2022.
  12. M.A. Navascués, Sangita Jha, A.K.B. Chand, R.N. Mohapatro, Iterative Schemes Involving Several Mutual Contractions, *Mathematics*, 11(9) 1-18, 2023.
  13. S. Verma, Sangita Jha, M.A. Navascués, Smoothness analysis and approximation aspects of non-stationary bivariate fractal functions, *Chaos Solitons and Fractals*, 175, 114003, 2023.
  14. A. I. Mondal, Sangita Jha, Non-stationary  $\alpha$ -fractal functions and their dimensions in various function spaces, *Indagationes Mathematicae*, 35(1), 159-180, 2024.

CONFERENCE  
PROCEEDINGS

1. M.A. Navascues, Sangita Jha, A.K.B. Chand and M.V. Sebastian, Fractal Approximants on the Circle, *Chaotic Modeling and Simulation* 3, 343-353, 2018.
2. Sangita Jha, A.K.B. Chand, Proceedings of the Fifth International Conference on Mathematics and Computing, *Advances in Intelligent Systems and Computing*, vol 1170. Springer, Singapore.
3. M.A. Navascues, Sangita Jha, A.K.B. Chand and M.V. Sebastian, Fractal Jackson Approximation on the Torus, *Fifteenth International Conference Zaragoza-Pau on Mathematics and its Applications, Monografías Matemáticas García de Galdeano* 42, 219-228, 2019.

BOOK CHAPTER

- S. Verma, Sangita Jha, A study on fractal operator corresponding to non-stationary fractal interpolation functions, a book chapter in *Frontiers of Fractal Analysis Recent Advances and Challenges* edited by S. Banerjee and A. Gowrisankar, CRC Press 2022.

## INVITED TALK

1. Fractal dimension and fractional calculus of non-stationary fractal functions, RMS conference (Womens in Mathematics Symposium), December 22-24, 2023, IIT Guwahati.
2. Fractal dimension and fractional calculus of non-stationary  $\alpha$ -fractal functions, AMS Spring Virtual Eastern Sectional Meeting, April 1-2, 2023.
3. A study on  $\alpha$ -fractal functions, Workshop on “Fractal geometry and related fields”, September 25-October 1, 2022, IIT Allahabad, India.
4. “Dimensional analysis of non-stationary fractal functions on the Sierpiński Gasket”, Fractals and Related Fields iv, Porquerolles island (France), September 3-9, 2022.
5. “Some remarks on non-stationary fractal interpolation functions”, AMS Spring Western Sectional Meeting, May 14-15, 2022 (Virtual)
6. “Fractal Operator Corresponding to  $\alpha$ -fractal Function” at Workshop on Functional Analysis and its Applications, January 14-16, 2022.
7. “A note on fractal dimension for a class of fractal interpolation” at AMS Fall Western Virtual Sectional Meeting, October 23-24, 2021.

## CONFERENCES

### PRE-

### SENTED/ATTENDED

1. Presented a talk on “ $\alpha$ -Fractal Zipper Rational Cubic Fractal Interpolation Functions”, *Virtual AMS Joint Mathematics Meetings*, 6-9 January 2021.
2. Presented a talk on “Zipper Rational Quadratic Fractal Interpolation Functions”, *International Conference on Mathematics and Computing*, 6-9 February 2019, KIIT University, Bhubaneswar, India.
3. Presented a talk on “Bernstein Fractal Polynomial Approximation”, *International Workshop and Conference on Topology and Applications*, 5-11 December, 2018, Rajagiri School School of Engineering and Technology, Kochin, India.
4. Presented a talk on “Fractal Functions with Variable Scaling”, *International Conference on Recent Advances in Pure and Applied Mathematics*, 23-25 October, 2018, Delhi Technological University, Delhi, India.
5. Presented a talk on “Parameter Identification of Constrained Data by a New Class of Rational Fractal Function”, *International Conference on Mathematics and Computing*, 17-21 January 2017, Haldia Institute of Technology, India.
6. Presented a talk on “Fractal Approximants on the Circle”, *The 10th International Conference on Chaotic Modeling and Simulation*, 30 May-2 June, 2017, Barcelona, Spain.
7. Attended *International Conference on Applications of Fractals and Wavelets*, 10-11 January 2015, Amrita School of Engineering, India.

CONFERENCES  
ORGANIZED

- A Special Session on “Fractal Geometry and Dynamical Systems” in AIMS conference on dynamical systems, differential equations and applications”, May 31-June 4, 2023, USA.
- AMS Spring Virtual Eastern Sectional Meeting, “Fractal Geometry and Dynamical Systems”, April 1-2, 2023.
- AMS Spring Western Sectional Meeting 1178, Special Session on “Fractal Geometry and Dynamical Systems”, USA, May 14-15, 2022 (Organizing with Prof. M. K. Roychowdhury and Dr. S. Verma).
- AMS Special Session on Fractal Geometry and Dynamical Systems, October 23-24, 2021. (Organizer-Sangita Jha, Mrinal Kanti Roychowdhury, Saurabh Verma).

RESEARCH VISIT

- Visited Prof. M. A. Navascués during June-July 2017, University of Zaragoza, Spain.
- Visited Prof. A.K.B. Chand during December 7-22, 2023, IIT Madras.

RESEARCH  
COLLABORATORS

- Prof. A. K. B. Chand, Department of Mathematics, IIT Madras, India.
- Prof. M. A. Navascués, Departamento de Matemática Aplicada, Escuela de Ingeniería Arquitectura, Universidad de Zaragoza, Spain.
- Dr. M. V. Sebastian, Centro Universitario de la Defensa, Academia General Militar, Zaragoza, Spain.
- Dr. S. Verma, Department of Mathematics, IIT Allahabad.
- Dr. S.K. Katiyar, Department of Mathematics, NIT Jalandhar

SUMMER SCHOOLS  
AND WORKSHOPS

- **Geometric Function Theory**  
Indian Statistical Institute, Chennai, 9 February, 2015.
- **International Conference on Analysis and its Applications**  
IIT Madras, 18-22 June, 2018.
- **Complex Analysis and Complex Dynamics Workshop** IITTP, 10-23 December, 2018.

RESPONSIBILITIES

- Reviewed several research articles for Fractals, Numerical Algorithms, Fractional Calculus and applied analysis, Chaos Solitons and Fractals, Journal of analysis, Statistics and Probability Letters, Computational and Applied Mathematics, International Journal of Computer Mathematics, The European Physical Journal Special Topics, MathSciNet, Conference Proceedings.

- Served as an Invigilator and Question Setter for several competitive exams in India.
- Served as a Faculty Advisor for M.Sc Course 2021-22.

M.SC. PROJECT  
GUIDED

1. Madan Kumar (419MA2087), "Some Approximation Theorems in Real and Complex Analysis."- M.Sc., 2020-21 Spring.
2. Ramesh Kumar (419MA2080), "A Study on Fixed Point Theorems in Metric Spaces and their Applications" - M.Sc., 2020-21 Spring.
3. Samapti Pratihari (420MA2051), "A Study on the Hardy Hilbert Space on the Unit Disk", M.Sc., 2021-22 Spring.
4. Buddhadeba Sahu (420MA2155), "Coefficient Problems on Univalent and Bi-univalent Functions", M.Sc., 2021-22 Spring.
5. Sohan Mishra (421MA2104) "Dimensional Analysis of Self-similar Sets", M.Sc 2022-23 Spring.
6. Madhumita Hembram (421MA2094) "A Study on Fractal Interpolation Functions" M.Sc 2022-23 Spring.
7. Subhendu Maity (421MA2099) "A Study on Quantization Dimension" M.Sc 2022-23 Spring.

COURSES TAUGHT I taught the following courses at VIT Vellore.

- MAT1001: Fundamentals of Mathematics (July-November 2019)
- MAT5006: Mathematics for Communication Engineering (July-November 2019)

I taught the following courses at NIT Rourkela

- MA4103: Complex Analysis (2020-21 Autumn)
- MA6103: Advanced Complex Analysis (2020-21 Autumn)
- MA1002: Mathematics II (2020-21 Spring)
- MA2306: Mathematical Methods (2020-21 Spring)

TEACHING  
EXPERIENCE

I have taught the following courses at NIT Rourkela:

- MA1002: Mathematics II (Spring 2021,2022, 2023)
- MA2306: Mathematical Methods (Spring 2021,2022)
- MA4103- Complex Analysis (Autumn 2020,2021, 2023)
- MA6103-Advanced Complex Analysis (Autumn 2020,2021,2023)
- MA4102- Measure Theory (Spring 2022)
- MA4373 Lab:Numerical Analysis Lab (Autumn 2022)

LINKS FOR  
WEBSITES

1. [Research Gate](#)
2. [Mathscinet](#)
3. [Official Website](#)
4. [Google Scholar](#).

EXTRA  
CURRICULAR  
ACTIVITIES

- Performed in several cultural program in school and college. Participated in intra hostel sports of IIT Madras.

REFERENCES

Dr. A.K.B. Chand (Guide)

Professor

Department of Mathematics

Indian Institute of Technology, Madras

Chennai, Pincode-600036

Email: *chand@iitm.ac.in*

Dr. M.A. Navascués (Co-guide)

Professor

Department of Mathematics

University of Zaragoza, Spain

Zaragoza, Pincode-500018

Email: *manavas@unizar.es*

Dr. M. Guru Prem Prasad

Professor

Department of Mathematics

Indian Institute of Technology Guwahati

Guwahati, India

Email: *mgpp@iitg.ac.in*

Dr. P. Veeramani

Retired Professor

Department of Mathematics

Indian Institute of Technology, Madras

Chennai, Pincode-600036

Email: *02076@retiree.iitm.ac.in*