

# Curriculum Vitae



## 1. Personal Details:

Name: Dr. Saroj Kumar Padhan

Nationality: Indian

Date of Birth: 15<sup>th</sup> July 1980

Gender: Male

Designation: Assistant Professor

Department: Mathematics

University: Veer Surendra Sai University of Technology, Burla

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Professor Colony-I, VSSUT, Burla  
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Country-India

**2. Whether belongs to SC/ST/OBC/PH:** OBC

## 3. Details of PhD Programme:

Title of the thesis: Second and higher order duality in variational, control and mathematical programming problems with generalized invexity

Guide Name: Dr. Chandal Nahak

Institute: Indian Institute of Technology Kharagpur

Date of registration: 17<sup>th</sup> April 2007 Year of Award: 2011

## Current Role Description

From August, 2011 I am working as an Assistant professor in the **Department of Mathematics, Veer Surendra Sai University of Technology, Burla, India.**

## Professional Training

1. Faculty Development programme on “Recent trends in advanced computing, RTAC-2013”, 29th April - 11th May, 2013, Veer Surendra Sai University of Technology, Burla.
2. UGC Sponsored Refresher Course in Mathematics at Academic Staff College, Sambalpur University from 3<sup>rd</sup> January to 23<sup>rd</sup> January, 2014.
3. CTS visitors’ programme at Indian Institute of Technology Kharagpur from 1<sup>st</sup> June to 28<sup>th</sup> June, 2014.
4. CTS visitors’ programme at Indian Institute of Technology Kharagpur from 27<sup>th</sup> May to 24<sup>th</sup> June, 2015.
5. CTS visitors’ programme at Indian Institute of Technology Kharagpur from 19<sup>th</sup> May to 1<sup>st</sup> June, 2016.
6. Workshop in “The Intertwining Standards in Physics and Mathematics: Fourier Analysis” IISER Pune, 19th January to 23rd January, 2018.
7. Refresher Course on Teacher and Teaching in Higher Education, 1<sup>st</sup> December, 2020 to 31<sup>st</sup> March, 2021, Swayam Arpit online Course Certification.
8. Industrial Training on “Overview of Telecommunication Network” BSNL, RTTC Bhubaneswar, 8<sup>th</sup> March to 20<sup>th</sup> March, 2021.
9. TEQIP II Sponsored Short Term Course on Optimization theory and practice at Indian Institute of Technology Kharagpur from 26<sup>th</sup> -30<sup>th</sup> October, 2018.
10. TEQIP III Faculty Induction Workshop at Indian Institute of Technology Kharagpur from 12<sup>th</sup> -16<sup>th</sup> June, 2018.

## Education Summary

Degree	Institute	Major and Specialization	Year	Division
<b><u>PhD(Maths)</u></b>	IIT Kharagpur	Applied Functional Analysis and Optimization	2011	
<b><u>M. Phil (Maths)</u></b>	Sambalpur University	Advanced Functional Analysis, Operator Theory	2004	1 <sup>st</sup>
<b><u>MA (Maths)</u></b>	Sambalpur University	Complex Analysis, Functional Analysis, Operation Research	2003	1 <sup>st</sup>
<b><u>BA(Maths)</u></b>	GM College, Sambalpur	Mathematics, Economics	2001	1 <sup>st</sup>

## M. Phil Guidance

SI. No.	Title of the Dissertation	Completed year
1.	Generalized invexity and some duality results on variational problems	2011
2.	Solution of optimization problems by convexity	2015
3.	Fourth order duality in nonlinear programming problems	2016
4.	Duality of control problems with a new approach	2018
5.	Variational inequalities and its applications	2018
6.	Root iteration methods in Vedas	2019

## PhD Guidance

SI No.	Broad area of research	Completed year
1.	Applied functional analysis and optimization	2018
2.	Fixed point theory and applications	2018
3.	Numerical Analysis	2019
4.	Symmetric duality in nonlinear programming problems	2023

## Publications

### 2023-24

1. G. Biswal, N. Behera, R.N. Mohapatra and **S.K. Padhan**, A pair of Mond–Weir type third order symmetric duality, *Journal of Applied Mathematics and Computing*, 69 (2023) 3391-3402.

### 2022

1. A. Patnaik, **S.K. Padhan** and R.N. Mohapatra, Sufficient conditions for extremum of fractional variational problems, *RAIRO - Operations Research*, 56 (2022) 637-648.
2. S. Gadtia and S.K. Padhan, A note on machine method for root extraction, *Boletim da Sociedade Paranaense de Matemática*, 40 , (2022) 1-6.

### 2021

1. G. Biswal, N. Behera, **S.K. Padhan** and R.N. Mohapatra, Third order symmetric duality in variational problems, *Pan-American Mathematical Journal*, 4 , (2021) 19-30.
2. P.K. Behera, **S.K. Padhan** and C. Nahak, Duality of control problems in general Banach spaces, *International Journal of Operational Research*, 42 , (2021) 358-370.

**2020**

1. S. Gadtia, **S.K. Padhan** and B. Bhoi, Square root formulae in the Śulbasūtras and Bakhshālī manuscript, *Journal of Interdisciplinary Mathematics*, 20 , (2020) 1-10.

**2019**

1. J. Dasmahapatra and **S.K. Padhan**, Second order duality for mathematical programming involving  $n$ -set functions, *Bol. Soc. Paran. Mat.*, 37 (2019) 37-54.
2. G. V. V. Jagannadha Rao, **S. K. Padhan** and M. Postolache, Application of Fixed Point Results on Rational  $F$ -Contraction Mappings to Solve Boundary Value Problems, *Symmetry* 11 (2019) 1-20.

**2018**

1. P.K. Behera, **S.K. Padhan** and R.N. Mohapatra, Second and higher order duality of variational problems in general Banach Spaces, *Panamer. Math. J.*, 28 (2018) 1-18.
2. **S.K. Padhan**, Duality of variational problems with a new approach, *RAIRO-Oper. Res.*, 52 (2018) 79-93. **I.F. 0.55**
3. P.K. Behera, **S.K. Padhan** and R.N. Mohapatra, On variational control problems in Banach Spaces, *Panamer. Math. J.*, 28 (2018) 1-18.

**2017**

1. **S.K. Padhan**, G.V.V. Jagannadha Rao, Ahmed Al-Rawashdeh, H.K. Nashine and R.P. Agarwal, Existence of fixed points for  $\gamma$ -FG-contractive condition via cyclic  $(\alpha, \beta)$ -admissible mappings in  $b$ -metric spaces, *Journal of Nonlinear Sciences and Applications*, 10 (10), (2017), 5495–5508.
2. **S.K. Padhan** and C. Nahak, Third order duality in nonlinear programming problems, *4OR. A Quarterly Journal of Operations Research*, 15 (2017) 93-105. **I.F. 1.6**
3. Z. Kadalburg, H.K. Nashine, **S.K. Padhan** and G.V.V. Jagannadha Rao: “Fixed point results in  $b$ -metric spaces using families of control functions and its application to dynamic programming”, *Nonlinear Analysis: Modelling and Control*, 22(5), (2017), 719-737. **I.F.-0.95**
4. **S.K. Padhan**, S. Gadtia and B. Bhoi, FPGA based implementation for extracting the roots of real number, *Alexandria Engineering Journal*, Accepted, 55 (2017) 2849-2854.
5. **S. K. Padhan**, G.V.V. Jagannadha Rao, Hemant Kumar Nashine and R. P. Agarwal, Some fixed point results for  $(\beta-\psi_1-\psi_2)$ -contractive conditions in ordered  $b$ -metric-like spaces, *Filomat*, 31(14) (2017), 4587-4612. **I.F. 0.69**
6. **S.K. Padhan**, S. Gadtia and A.K. Pattanaik, Remarks on Heron’s cubic root iteration formula, *Bol. Soc. Paran. Mat.*, 35 (2017) 1-8.
7. A.K. Bhurjee, P. Kumar and **S.K. Padhan**, Solid Transportation Problem with Budget Constraints under Interval Uncertain Environments, *International Journal of Process Management and Benchmarking*, 7 , (2017) 172-182.

8. **S.K. Padhan**, G.V.V. JagannadhaRao, Ahmed Al-Rawashdeh, H.K. Nashine and R.P. Agarwal, Existence of fixed points for  $\gamma$  –FG-contractive condition via cyclic  $(\alpha, \beta)$ -admissible mappings in b-metric spaces, *Journal of Nonlinear Sciences and Applications*, 10 (10), (2017), 5495–5508.
9. **S.K. Padhan**, G.V.V.J. Rao and H.K. Nashine, Common fixed point results for asymptotically regular mappings on orbitally ordered complete metric spaces, *Bulletin of the Allahabad Mathematical Society*, 32 (2017) 1-25.

## 2016

1. **S. K. Padhan**, C. Nahak and M. Postolache, Control problems with Kuhn-Tucher and Fritz John generalized invexity, *Journal of Mathematical Analysis*, 7 (2016) 51-57.
2. **S.K. Padhan**, A.K. Bhurjee and P.K. Behera, Variational problems and its duality in Banach spaces, *Journal of Information and Optimization Sciences*, 37 (2016) 591-604.
3. A.K. Bhurjee and **S.K. Padhan**, Optimality conditions and duality results for non- differentiable interval optimization problems, *Journal of Applied Mathematics and Computing*, 50 (2016) 59-71.
4. **S. K. Padhan**, G.V.V. Jagannadha Rao, Hemant Kumar Nashine and Z. Kadelburg, Common fixed point results using  $(\varphi_1, \varphi_2, \varphi_3)$  - contractive conditions in orbitally 0-complete partial metric spaces, *Bulletin of Mathematical Analysis and Applications*, 8 , (2016) 12-24.

## 2015

1. **S.K. Padhan** and C. Nahak, Second-order symmetric duality for invex composite optimization, *J. Egyptian Math. Soc.*, 23 (2015) 149-154.
2. **S.K. Padhan** and C. Nahak, Higher-order symmetric duality with higher-order generalized invexity, *J. Appl. Math. Comput.*, 36 (2015) 1334-1341.

## 2013

1. **S.K. Padhan** and C. Nahak, Higher-order generalized invexity in variational problems, *Math. Meth. Appl. Sci.*, 36 (11) (2013) 1334-1341. **I.F. 1.017**
2. **S.K. Padhan** and C. Nahak, Second and higher order generalized invexity and duality in mathematical programming, *Int. J. Math. Oper. Res.* 5(2) (2013), 170-182.

## 2011

1. **S.K. Padhan** and C. Nahak, Higher-order symmetric duality in multiobjective programming problems under higher-order invexity, *Appl. Math. Comput.*, 5 (2011) 1705-1712. **I.F. 1.738**
2. **S.K. Padhan**, C. Nahak and R.N. Mohapatra, Second and higher order duality in Banach space under  $\rho-(\eta, \theta)$ -invexity, *Nonlinear Anal. Hybrid Syst.*, 5 (2011), 457-466. **I.F. 3.963**

## 2010

1. **S.K. Padhan** and C. Nahak, Second order duality for the variational problems under  $\rho-(\eta, \theta)$ -invexity, *Comput. Math. Appl.*, 60 (2010) 3072-3081. **I.F. 1.531**

## Book Chapter

1. **S.K. Padhan** and C. Nahak, Second order symmetric duality with generalized invexity, One chapter of the book "[Topics in Nonconvex Optimization](#)", [Springer Optimization and Its Applications](#), Volume 50 (2011), 205-214, DOI: 10.1007/978-1-4419-9640-4\_12.
2. **S.K. Padhan**, P.K. Behera and R.N. Mohapatra, Second order symmetric duality and variational problems, *Mathematics and Computing*, Volume 139, 49-57, Springer-India 2015, DOI: 10.1007/978-81-3222-2452-5\_4.

## Conferences

1. **S.K. Padhan**, chaired a Session in the International Conference organized by Department of Mathematics, Bioinformatics and Computer Applications, Maulana Azad National Institute of Technology, Bhopal, India, June 27-28, 2024.
2. **S.K. Padhan**, Third order symmetric duality in nonlinear programming problems, Indian Mathematical Society, An International Meet (IMS-2023), Organized by Department of Mathematics, BITS-Pilani, Hyderabad Campus, December 22-25, 2023.
3. **S.K. Padhan**, Role of fractional order convexity in nonlinear programming problems, 2<sup>nd</sup> International Conference on Mathematical Modelling , Computational Intelligence Techniques and Renewable Energy (MMCITRE-2021), Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India, February 06-08, 2021.
4. **S.K. Padhan**, S. Gadtia and B. Bhoi, Square root formula in the Sulbasutras and the Bakhshali manuscript, International Conference on sustainable Computing in Science, Technology and Management (SUSCOM-2020) , Amity University Rajasthan, India, 20-22, January 2020.
5. **S.K. Padhan** and G.V.V. Jagannadha Rao, Fixed point results of rational  $F$ -contraction in  $b$ -metric-like spaces, A national Conference on Engineering Mathematics (TOPAS-2017), 16<sup>th</sup>-17<sup>th</sup> December, 2017, Indian Institute of Technology Kharagpur, West Bengal, India.
6. **S.K. Padhan**, S. Gadtia and R.N. Mohapatra, A Study on Heron's Cubic Root Iteration Formula, International Conference of the Indian Mathematical Consortium (TIMC) in cooperation with American Mathematical Society (AMS), 14<sup>th</sup>-17<sup>th</sup> December, 2016, Banaras Hindu University Varanasi, India.
7. **S.K. Padhan**, P.K. Behera and R.N. Mohapatra, Second order symmetric duality and variational problems, 2<sup>nd</sup> International Conference on Mathematics and Computing (ICMC-2015), Haldia Institute of Technology, West Bengal, India.
8. **S.K. Padhan**, S. Gadtia, Extraction of roots of real numbers: A survey with some new results, International Conference on History and Development of Mathematics (ICHDM-2014), Savitribai Phule Pune University, Pune, India.
9. **S.K. Padhan**, C. Nahak and D. K. Behera, Mangasarian second and higher order duality in Banach space, International Conference on Advances in Control and Optimization of Dynamic Systems (ACODS-2012), IISc. Bangalore, India.

10. **S. K. Padhan** and C. Nahak, Second-order duality for the invex composite function, International Conference on Operations Research Applications in Engineering and Management (ICOREM- 2009), Anna University, Tiruchirappalli, India.

### **Invited Talk**

1. Delivered an invited talk on “Fractional Calculus: A generalization of integer orders calculus and their applications”, National seminar on recent development on Analysis and Algebra held on 14<sup>th</sup> September, 2024 organized by Department of Mathematics, Panchayat College Bargarh, Odisha, India.
2. Delivered an invited talk on “Nonlinear programming problems on fractional calculus environment”, International Conference on Mathematical Analysis and computing (ICMAC-2022), December 22-23, 2022, Department of Mathematics, SSN College of Engineering, Chennai, Tamilnadu, India.
3. Delivered an invited talk on “An introductory talk on fractional calculus”, Annual Day Celebration 2022, Department of mathematics, Sambalpur University.
4. Delivered an invited talk on Faculty Development Program, Conducted by Dept. of Math., Central University of Jharkhand, Ranchi, November 6-10, 2020.
5. Delivered an invited talk on “Application of Mathematics in Engineering” 29<sup>th</sup> January, 2020 at Silicon Institute of Technology, Sambalpur, Odisha, India.
6. Delivered an invited talk on “Application of Duality in Mathematical programming problems”, International Conference on Mathematical Analysis and computing (ICMAC-2019), December 23-24, 2019, Department of Mathematics, SSN College of Engineering, Chhanei, Taminnadu, India.
7. Delivered an invited talk on “A New Approach of Duality in Nonlinear Programming” in the special session, SS 21A-AMS special session on “Dirac Equations, Variational Inequalities, Sequence Spaces and Optimization” at the sectional meeting of the American Mathematical Society, 23<sup>rd</sup>–24<sup>th</sup> September, 2017, **University of Central Florida, Orlando, USA.**
8. Delivered an invited talk on “Iteration Methods for Finding Roots of a Number” in the Model National Seminar on “exploration of inroads to good mathematics”, 29<sup>th</sup> January & 5<sup>th</sup> February, 2017, organized by Gossner College, Ranchi with the support of Jharkhand Society of Mathematical Analysis, Ranchi, India.
9. Delivered a popular lecture on 25<sup>th</sup> November, 2016 at Silicon Institute of Technology, Sambalpur, Odisha, India.
10. Delivered an invited talk on “Optimization in Banach Spaces” in two days “National Seminar on Advances in Mathematical Analysis and its Applications”, 19<sup>th</sup>-20<sup>th</sup> December, 2014, organized by department of Mathematics National Institute of Science and technology, Berhampur, Odisha, India.

11. Delivered an invited talk on “Second and higher order generalized invexity and duality in Mathematical programming”, a mini Conference on Function Theory and Applications, KIIT University, Bhubaneswar, India, 2010.

### Project

1. Application of convexity in optimization problems with a new approach, Govt. of Odisha Science and Technology Department, Rs 7,46,000.00

### Administrative Responsibilities

1. Public Information Officer, RTI Act.-2005
2. Assistant Warden of Marichi Hall of Residence
3. Academic Co-ordinator of Vice-chancellor
4. Nodal Officer Scholarships
5. Assistant Controller of Examination
6. Warden Atri Hall of Residence

### Personal Information

Mother's Name                      Kishori Padhan  
Father's Name                      Adhikari Padhan  
Date of Birth:                      15<sup>th</sup> July 1980  
Fellowships:                      **SRF from MHRD, PDF from NBHM**  
Nationality:                      Indian  
Sex:                                      Male  
Marital Status:                      Married  
Language:                      English, Bengali, Hindi and Oriya  
Passport No:                      H0173544

Place: Burla  
Date: 29.10.2024

*Saroj Kumar Padhan*  
Saroj Kumar Padhan