

Dr. Basudeba Behera

Assistant Professor, Department of Electronics and Communication Engineering

National Institute of Technology, Jamshedpur (NITJSR), India

(An Institute of National Importance)

PhD: Indian Institute of Technology Guwahati (IITG)

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RESEARCH INTERESTS

Sensors, Actuators, Micro/ Nanoelectromechanical Systems (MEMS/NEMS), Piezoelectric devices, Ultrasonic devices, Surface acoustic wave devices/ motors, Internet of Things (IoT).

EXPERIENCES

Jun 2018 – Till Date: Assistant Professor *National Institute of Technology (NIT), Jamshedpur*

Profile: Conducting Research and Teaching.

Aug 2016 –Jun 2018: Assistant Professor *Indian Institute of Information Technology, Dharwad*

Profile: Conducting research on Ultrasonic Micro/ Nanosensors and actuators, SAW Devices, IoT.

Courses Taught: Digital Electronics, Microprocessor and Microcontroller, Embedded System, Sensors & IoT.

New Labs Setup: Sensors & IoT.

Aug 2015 – Aug 2016: Senior Research Fellow *Centre for Nanotechnology, IIT Guwahati, India*

Profile: Being part of the research team in Department of Electronics and Information Technology (DeitY), Government of India sponsored a project to carry out research and develop Centre for Excellence in Nanoelectronics & Theranostic Devices (CENTD).

Jun 2006 – Jun 2007: Graduate Engineer Trainee *Time Technoplast Ltd., Daman, India*

Profile: Maintenance of the breakdown electronic machinery.

EDUCATION

Jul 2010 – Jul 2017 **Doctor of Philosophy (PhD) in Electronics and Electrical Engineering**

Indian Institute of Technology, Guwahati (IITG), India

Thesis Title: *Modelling, Simulation and Fabrication of Surface Acoustic Wave Motors Employing Dual Friction-drive*

The thesis mainly focuses on the research work carried out on the modelling, finite element simulation, fabrication, and demonstration of the proposed dual friction-drive (DFD) surface acoustic wave (SAW) motor, where a slider/ rotor placed between two identical stators makes motion due to the effect of the SAW.

Supervisor: Prof. Harshal B. Nemade, Professor, IIT Guwahati, India

Jul 2007 – Jul 2009 **Masters of Technology in Electronics and Communication Engineering**

Gandhi Institute of Engineering and Technology (GIET), Gunupur, under Biju Patnaik University of Technology (BPUT), Odisha, India.

CPI : 8.38/ 10

Thesis Title: *Modelling and simulation of wireless mobile multiple phase transmission protocols using tandem queues with blocking*

To investigate the waiting time/delay of a broad class of mobile communication system-oriented queuing models. Both exact analytic and approximation algorithm techniques are employed in order to obtain the exact and approximate waiting/delay distribution of those models.

Supervisor: Dr. P. C. Mishra, Professor, India

Jul 2002– Jun 2006 **Bachelors of Engineering in Electronics and Instrumentation Engineering**

Gandhi Institute of Engineering and Technology, Gunupur, Odisha, under BPUT, India

Marks : 75.00% (Honors)

Project Title-1: **Automated level Controller using Microprocessor/ Microcontroller**

The objective of the project is to measure the level of any liquid container automatically by using Microprocessor/ Microcontroller.

Supervisor: Mr. Vinod, GIET, Gunupur

Project Title-2: **Location Based Service in Mobile Domain**

The objective of this project the is to provide brief information of a locality like the presence of schools, colleges, visiting places, and market complex to the newcomer people who opt for it about a specific location.

Supervisor: Mr. Pankaj Diwan, Managing Director at Idea Labs

Jul 2000–May 2002 Intermediate in Science

Kabi Samrat Upendra Bhanja College, Bhanjanagar under CHSE, Odisha.

Jul 1999–Jun 2000 High School

Sribatsa high school, Bhanjanagar under BSE, Odisha.

ACHIEVEMENTS

- Graduate Aptitude Test (GATE-2007) with All India Rank (AIR) 962 in Instrumentation engineering.
 - Qualified Odisha JEE (OJEE 2002) test with the rank of 339 in Math, Physics, and Chemistry 2002.
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RESEARCH PUBLICATIONS

Patents

1. **B. Behera** and H. B. Nemade, “Dual drive surface acoustic wave motor and the package”, application no.: 878/KOL/2014, Date of filing: 26thAug 2014, Published on 26thSep 2014, India.
 2. **B. Behera** and H. B. Nemade, “Dual drive surface acoustic wave linear motor and the package”, application no.: 978/KOL/2014, Date of filing: 24thSep 2014, published on 24thOct2014, India.
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Book Chapter

1. **B. Behera**, G. Gupta, and R. Yadav, “Automated Street Lighting System using IoT,” to be published in Springer: Industrial Internet of Things and Smart Manufacturing, 2018, ISBN No. 978-1-912532-06-3.
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Journals

1. **B. Behera**, H. B. Nemade, “Investigating Translational Motion of a Dual Friction-drive Surface Acoustic Wave Motor through Modelling and Finite Element Simulation,” Simulation: *Transactions of the Society for Modelling and Simulation International*, Jun 2018.
 2. **B. Behera**, H. B. Nemade, “Dual Friction-Drive SAW Motor Utilizing Cylindrical Shaft as External Load Driver,” Accepted in Taylor & Francis: *Ferroelectrics Letters*, Vol. 45, No.1-3, Jan 2018.
 3. **B. Behera**, H. B. Nemade, “A Review Paper on Recent Developments of Piezoelectric Motors with Diverse Operating Principles,” Springer: *ISSS Journal of Micro and Smart Systems*, Vol. 6, Issue 2, pp. 1-13, Oct 2017, DOI: 10.1007/s41683-017-0015-x,.
 4. **B. Behera**, H. B. Nemade, “Finite element simulation of a SAW motor driven by dual friction,” Elsevier: *Materials Today Proceedings*, Vol. 4, Issue 9, pp. 10612-10616, Jul2017.
 5. V. B. Semwal, A. Chauhan and **B. Behera**, “An optimized feature selection technique based on incremental feature analysis for bio-metric gait data classification”, Springer: *Multimedia Tools and Applications*, Volume 76, Issue 22, pp 24457–24475, Nov 2016, DOI: 10.1007/s11042-016-4110-y.
 6. **B. Behera**, H. B. Nemade, “Modelling and finite element simulation of a surface acoustic wave driven linear motor,” Elsevier: *Procedia Engineering*, Vol. 144, p-p. 1411 - 1418, Apr 2016.
 7. **B. Behera**, B. Patnaik, and P. C. Mishra, “Modelling and simulation of wireless mobile multiple phase transmission protocols using tandem queues with BAS blocking,” i-manager: *Journal of Electronics Engineering*, Vol.1, Issue. 2, p-p.1- 5, Feb 2011.
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Journals (Under Review)

1. **B. Behera**, H. B. Nemade, “Performance evaluation of a dual-friction drive surface acoustic wave motor,” Submitted to Springer: *National Academy Science Letters*, 2017.
 2. **B. Behera**, H. B. Nemade, “Design and Investigation of a Dual Friction-drive Piezoelectric Actuator utilizing a Cylindrical Shaft as Slider/Rotor,” Submitted to IEEE: *Transaction on Industrial Electronics*.
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Conferences

1. **B. Behera**, G. Gupta, and R. Yadav, "Automated Street Lighting System using IoT," Accepted to present in *International Conference on Industrial Internet of Things and Smart Manufacturing*, at Imperial College London, London, United Kingdom, 5th – 6thSep 2018.
2. **B. Behera**, H. B. Nemade, and S. Trivedi, "Modelling and finite element simulation of a dual friction-drive SAW motor using the flat slider," *IEEE IUS 2016*, Tours, France, p-p. 1- 4, 18th -21st Sep 2016.
3. **B. Behera**, H. B. Nemade, "Finite element simulation of a SAW motor driven by dual friction," *ICEMS 2016*, JNU Jaipur, India, p-p. 1 – 5, 17th -19thMar 2016.
4. **B. Behera**, H. B. Nemade, "Modelling and finite element simulation of a surface acoustic wave driven linear motor," *12th ICOVP 2015*, IIT Guwahati, India, p-p. 1 – 8, 14th-17thDec 2015.
5. **B. Behera**, H. B. Nemade, and S. Trivedi, "Finite element simulation of a surface acoustic wave driven linear motor using COMSOL Multiphysics," *COMSOL Conference*, Pune, India, p-p. 1 - 5, 29th- 30th Oct 2015.
6. **B. Behera**, H. B. Nemade, "Optimizing preload and coefficient of friction for the surface acoustic wave linear motor," *5th International and 26th AIMTDR 2014*, IIT Guwahati, India, ISBN: 978-8-19274-610-4, p-p. 1 -5, 12th-14th Dec 2014.
7. **B. Behera**, H. B. Nemade, "Simulation of piezoelectric SAW motor using COMSOL Multiphysics," *COMSOL Conference*, Bangalore, India, p-p. 1 - 5, 13th - 14thNov 2014.
8. **B. Behera**, M. Panda, P. C. Mishra, "Modelling and simulation of wireless mobile multiple phase transmission protocols using tandem queues with blocking," *TICE 2009*, Thapar University Patiala, India, p-p. 1 - 5, 29th -30th Oct 2009.

INVITED TECHNICAL TALKS

1. Delivered talk on "MEMS Actuators: A journey of an Idea to Copyright" as Faculty development program of Patent Filing at GIET, Gunupur, Odisha, India on 27th Jan 2018.
2. Delivered talk on "Internet of Things (IoT): Past, Present and Future" to the students at GIET, Gunupur, Odisha, India on 27th Jan 2018.
3. Delivered talk on "Microelectromechanical Systems (MEMS) Actuators in Real Life" for AICTE sponsored two day National Seminar on "Data Analytics in Education Management System" at KLS Gogte Institute of Technology, Belgavi, and Karnataka, India on 31st Oct 2017.
4. Delivered talk on "Microelectromechanical Systems (MEMS) Actuators" in research scholar forum organized by Department of Electronics and Electrical Engineering, IIT Guwahati, India on 6th Nov 2014.

SCHOLARSHIPS AND FINANCIAL GRANTS

1. Science and Engineering Research Board (SERB), Government of India sponsored Travel grant to present a research paper at 2016 IEEE International Ultrasonic Symposium, Tours, France on 18th- 21st Sep 2016.
2. Ministry of Human Resource Development, Govt. of India sponsored a scholarship for the PhD program from Jul 2010 - Jun 2015.
3. Ministry of Human Resource Development, Govt. of India sponsored a scholarship for the M.Tech program from Aug 2007 - Jun 2009.

PROFESSIONAL TRAINING

1. Fabrication experience of Micro-electro mechanical system (MEMS) devices. As I worked in fabrication lab to develop MEMS devices at CENSE, IISc Bangalore, India from 11thApr - 10thMay 2014.
2. Hands-on training on MEMS/NEMS fabrication at Indian nano users program, Indian Institute of Science, Bangalore, India from 26thNov - 05thDec 2012.
3. Workshop cum hands-on training on ROBOTICS at IIT, Guwahati, India.
4. Training program on SCADA, PLC and DCS at GIET, Gunupur, India, from 8th - 9thAug 2008.
5. Summer internship in NALCO, Damonjodi, India from May-Jun 2005.

CONFERENCES/SEMINARS/WORKSHOPS ATTENDED

1. Xilinx FPGA architecture & design flow, at IIT Guwahati, India from 22nd- 23rdNov 2013.
 2. MEMS/NEMS fabrication at Indian Nano Users program, IISc, Bangalore, India from 16th - 18thApr 2012.
 3. Embedded system at GIET, Gunupur, India from 6th-7thSep 2008.
 4. Advanced Nanomaterials and Nanotechnology (ICANN-2013), IIT Guwahati, 1st- 3rd Dec 2013.
 5. INUP Familiarization workshop on Electron and Ion Beam Lithography, CENSE, IISc Bangalore, 3rd- 4th Dec 2012.
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6. National Conference on Recent Advances in Computational Technique in Electrical Engg., SLIET, Longowal, 19th - 20th Mar 2010.
 7. National Conference on Recent Advances in control and Instrumentation, GIET Gunupur, 8th - 9th Nov 2008.
 8. National Workshop on Embedded System Design, GIET Gunupur, 6th - 9th Sep 2008.
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TECHNICAL SKILLS

- **Computing Softwares/ Tools:** COMSOL Multiphysics, ANSYS workbench and APDL, Autodesk in Auto CAD, Adobe Photoshop, Designing of the mask with Clewin 4 and Circuit Cam.
 - **Languages:** C, LaTeX, MATLAB.
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MEMBERSHIP

- Member of IEEE student chapter since 2012 with identity: **90468878**.
 - Lifetime member of Indian Society for Technical Education (ISTE): **LM 69559**.
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COURSES TAKEN IN PHD

- Analog IC design, Digital IC design, VLSI system design, Semiconductor device modelling technology.
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RESPONSIBLE POSITIONS

Organizer

- The 2nd National workshop on NEMS/MEMS and Theranostic Devices, NWNTD, under the Centre for Nanotechnology at the IIT Guwahati, from 21st - 22nd Mar 2016.
 - The 3rd International Conference on Advanced Nanomaterials & Nanotechnology, Organized by Centre for Nanotechnology, IIT Guwahati, India, 1st – 3rdDec 2013.
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Board of Studies

- A member in the Board of Studies in Gandhi Institute of Engineering and Technology Gunupur, Odisha (An Autonomous Institute).
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Editorial Board

- Agu International Journal of Engineering and Technology, ISSN: 2455-0442(Online), ISSN: 2455-6734(Print).
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Reviewer for Journal

- IEEE Transaction on Industrial Electronics.
 - IEEE Transaction on Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC).
 - National Academy Science Letters
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Technical Program Committee

- The 2nd edition of Conference on Information and Communication Technology (CICT-2018) to be held at PDPM-IIITDM Jabalpur, India on 26th - 28thOct 2018.
 - The 3rd IEEE International Conference on Research in Intelligent and Computing in Engineering (RICE 2018) held at Universidad Don Bosco (UDB), El Salvador on 22nd - 24thAug 2018.
 - The 2018 International Conference on Control, Automation and Electrical Systems (ICCAES-2018), held at Wuhan, Hubei, China on 20th-22ndApr 2018.
 - International Conference on Automation and Computational Engineering (ICACE - 2018), Amity University, Greater Noida, UP, India.
 - International Conference on Wireless Sensor Networks, Ubiquitous Computing and Applications 2018 (ICWSNUCA-2018), held at GRIET, Hyderabad, Telangana on 24th- 25thAug 2018.
 - Conference on Information & Communication Technology, (CICT-2017), held at ABV Indian Institute of Information Technology and Management Gwalior, (M. P.). 2017
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Projects Guided

- "Automatic Aquarium Monitoring System using IoT" by A. Surya Teja (ECE) and Mohan Sai (CSE), 3rd year, Indian Institute of Information Technology Dharwad, May 2018.
 - "Automatic Street Lighting System using IoT" by Gaurav Gupta (CSE) and Rakshit Yadav (ECE), 3rd year, Indian Institute of Information Technology Dharwad, May 2018.
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- "Online Water Can Delivery System using IoT" by Shivam Kumar (CSE) and Rajiv Ranjan (CSE), 3rd year, Indian Institute of Information Technology Dharwad, May 2018.
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Administrative Positions at IIT Dharwad

- Faculty Co-ordinator in Training and Placement from Jan 2017 -Jun 2018.
 - Faculty Member in Library Committee from Aug 2016 -Jun 2018.
 - Faculty Member in Hostel Committee from Aug 2016 -Jun 2018.
 - Coordinator for the "Swachhta Pakhwada" an MHRD, Government of India initiated Clean India program for a duration of 15 days from 1st - 15thSep 2017.
 - Nodal Officer for "Swachh Bharat Summer Internship Programme 2018".
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EXTRACURRICULARS

- Election officer for general body election at IIT Guwahati for the year 2012-13 and 2015-16.
 - Two days' forest trekking by world greener program to Garbhanga forest, Assam in Nov 2010.
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PERSONAL INFORMATION

- Father's name : Abhirama Behera
 - Mother's Name : Prafulla Kumari Behera
 - Spouse Name : Chinmayee Behera
 - Sex : Male
 - Date of Birth : 09th May 1985
 - Nationality : Indian
 - Languages speak : English, Hindi and Odiya
 - Corresponding Address : Flat No.- C-5, Bibha Kunj Tower, Near Icchapur Durga Mandap, Adityapur-2
Jamshdepur, Dist- Seraikela Kharsawan, Jharkhand, Pin- 831013, India
 - Permanent Address : At - Muktipath street, Po - Bhejiput, Via - Bhanjanagar, District - Ganjam,
State - Odisha, Pin Code - 761126, India
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DECLARATION

I hereby declare that the above-mentioned information is correct upto my knowledge and I take the responsibility for the correctness of the above-mentioned particulars.

Date:

Place:

Basudeba Behera
