

JANARDAN KUNDU

Address:
Janardan Kundu,
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Career Objective: To work in a challenging environment that will test me at all levels and allow me to utilize and ameliorate my professional as well as personal skills.

Education:

Ph. D (Electrical Engineering)	Indian Institute of Engineering, Science and Technology (IEST), Shibpur, India	2013 – Submission stage
M.Tech (Electrical Engineering Specialization: Control & Instrumentation)	NIT Allahabad, India	2010 - 2012

Experience:

- Currently working as an **Asst. Professor (MHRD)** in the EE dept., **Govt. College of Engineering & Technology, Bikaner** from January, 2018 onwards.
- Worked as a **Guest Faculty** in the School of Mechatronics and Robotics, **Indian Institute of Engineering Science and Technology (IEST), Shibpur** from July, 2013 to December, 2013.
 - Subject: Advanced Control System (**MEC-104**)
 - Level: **M.Tech**
- Worked as a **Faculty** in the Department of Electrical and Electronics Engineering, **DBIT, Dehradun, Uttarakhand** from July 2012 – Jan 2013.
 - Subject: Control Systems, Applied Electronics & Instrumentation, Basic Electrical Engineering
 - Level: **B.Tech**

Academic visit in Foreign Countries:

- Invited Paper at **IEEE-IAS** Annual Meeting, **Portland, USA** in 2016.
- Invited Paper at **IEEE-IAS** Annual Meeting, **Texas, USA** in 2015.
- National University of Singapore (NUS), **Singapore** in 2015.

Honours etc:

- **Invited lecture** at College of Engineering, Pune (**CoEP**) in March, 2017.
- **Invited** as a delegate to the 8th University Scholars Leadership Symposium at the **United Nations** in Bangkok, Thailand in 2017.
- **2nd Prize** in **Young Scientists' Meet** by Ministry of Science and Technology, Govt. of India at India International Science Festival (**IISF**), **IIT Delhi** in 2015.



- **AMTGP** Travel Award to visit **IEEE IAS** Annual Meeting at **Portland, USA** in 2016.
- **AMTGP** Travel Award to visit **IEEE IAS** Annual Meeting at **Texas, USA** in 2015.
- **1st Prize** for technical session in **Research Scholars' Day** organized by Indian Institute of Engineering, Science & Technology (**IEST**), Shibpur, India in 2016.
- **IEEE-IAS** Student Branch **Chapter Chair** of Kolkata Section (**R10**).
- **IEEE SB Chair** of Indian Institute of Engineering, Science & Technology, Shibpur Student Branch.
- The chapter won the global "*Continued Performance Outstanding Small Chapter Award 2015*" in the Outstanding Chapter Award Contest by **IEEE at Texas, USA**.



- The chapter won the global "*Continued Performance Outstanding Small Chapter Award 2016*" in the Outstanding Chapter Award Contest by **IEEE at Portland, USA**.

Academic Achievements & Awards:

- Achieved **CSIR** (Govt. of India) SRF Award in 2013.
- Achieved **UGC-BSR** (Govt. of India) SRF Award in 2013.
- Achieved **TEQIP** (Govt. of India) SRF Award in 2013.
- Achieved **MHRD** (Govt. of India) Award in 2011.
- **GATE** Qualified in 2010 (AIR-718, Percentile-97.04).

Research Work (Completed):

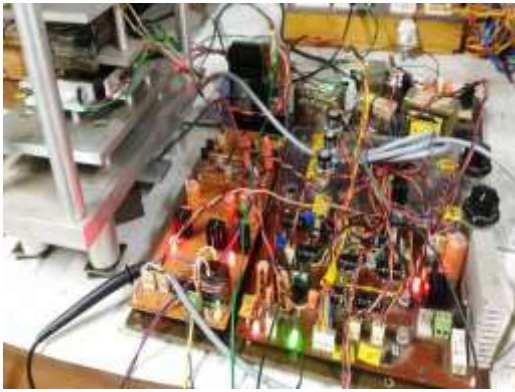
A) Design, modelling, fabrication and control of a levitation prototype for a steel ball.

- 1) An electromagnetic levitation setup has been designed, modelled and fabricated where a ball of 62 gm mass has been successfully and steadily levitated.
- 2) The mathematical model for the system has been derived.
- 3) The force computation (using FEM package) for the above system is also done. The practical results and results obtained from FEM analysis are found to be in very good correlation. A permeance function based approach is also considered for analytical model of the system.
- 4) A stabilizing controller has been designed for this system.



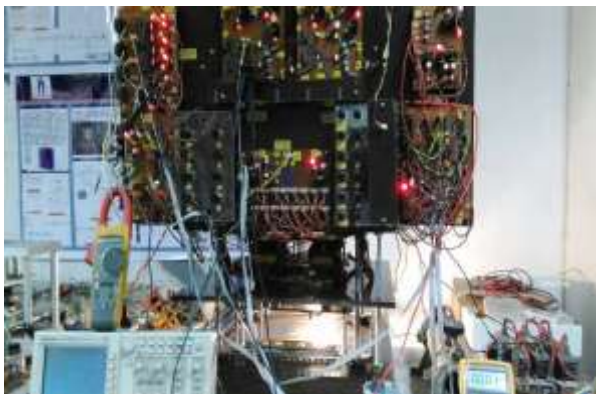
B) Design, analysis and implementation of an electromagnetic levitation system with single axis control for a rectangular shaped object.

- 1) An electromagnetic levitation setup has been designed, modelled and fabricated where a rectangular shaped object of 148 gm mass has been successfully and steadily levitated.
- 2) The force computation (using FEM package) for the above system is also done. The practical results and results obtained from FEM analysis are found to be in very good correlation. A permeance function based approach is also considered for analytical model of the system.
- 3) In this setup transistor is used as a linear amplifier and the operating point is controlled by an analog controller using two loops (an inner current controller and an outer position controller).
- 4) In inner current controller there have one hall sensor and one inductive proximity sensor is used in the outer feedback loop. The performance analysis has been carried out.



C) Design, analysis and implementation of an electromagnetic levitation system with tilt control (Multi-axis control).

The proposed prototype have four electromagnetic actuators of attraction type, four permanent magnets and four gap sensors, all located at the corners of the platform. In our platform the electromagnets (EMs) are placed under the guideway. The platform where four rectangular shaped steel plate are placed on an aluminium plate will lift up when EMs attract. Assuming a uniform distribution of the load, the upward lift force to be generated by each EM is approximately 1.45N. It is tried to analyse and control the electromagnetic levitation system based on a linear approximation of the nonlinear model. In this approach, the magnet-coil is to be excited by a controlled current source which results in a simpler second order transfer function for the system.



Member of Technical Society:

- IEEE
- IEEE Young Professionals
- IEEE Industry Applications Society (IAS)
- IEEE Control System Society
- The Indian Science Congress

List of Publications:

Journal (Communicated):

1. **Janardan Kundu**, Mainak Sengupta, “*Design, Modelling, Fabrication of a Single-axis Attraction type Levitation Prototype with 3-degree Freedom Control*”, **Journal of Sadhana-Springer**.

Conference (Published):

2. **Janardan Kundu**, Mainak Sengupta “*Design, modelling, fabrication and control of a levitation prototype*”, **IEEE Industrial Applications Society Annual Meeting, Portland, USA**, October. 02-06, 2016.
3. **Janardan Kundu**, Mainak Sengupta, “*Design, modelling, fabrication and control of a levitation prototype with 3-degree freedom control*”, **India International Science Festival (IISF-15), IIT Delhi**, India, December. 04-08, 2015.
4. **Janardan Kundu**, Mainak Sengupta, Aparajita Sengupta, “*Design, modelling, fabrication and control of a levitation prototype for a steel ball*”, **IEEE Industrial Applications Society Annual Meeting, Texas, USA**, October. 18-22, 2015.
5. **Janardan Kundu**, Mainak Sengupta, “*Design, Modelling, Fabrication of a Single-axis Attraction type Levitation Prototype with 3-degree Freedom Control*”, 7th National Power Electronics Conference 2015 (**NPEC 2015**) at **IIT Bombay**. (https://www.ee.iitb.ac.in/npec/Papers/Program/NPEC_2015_paper_8.pdf)
6. **Janardan Kundu**, Mainak Sengupta, “*Design, Modelling, Fabrication and Control of a single-axis Attraction type Levitation Prototype*”, 8th National Power Electronics Conference 2017 (**NPEC 2017**) at **CoEP, Pune**.
7. **Janardan Kundu**, Mainak Sengupta, Aparajita Sengupta, “*Design, modelling, fabrication and control of an attraction type levitation prototype*”, **IEEE International Conference (PEDES 2014) on Power Electronics, Drives and Energy Systems Conference at IIT Bombay**.
8. **Janardan Kundu**, Mainak Sengupta, Aparajita Sengupta, “*Design, Modelling, Fabrication and Testing of an Electromagnetic Coil System for a Levitation Mechanism*”, 6th National Power Electronics Conference 2013 (**NPEC 2013**) at **IIT Kanpur**.
9. **Janardan Kundu**, Richa Negi, “*Stability Analysis of Discrete State Time Delay Systems with Actuator Saturation*,” 2nd **IEEE International Conference on Power, Control and Embedded Systems (ICPCES 2012)**, **MNNIT Allahabad** , India , Dec. 17-19, 2012, pp. 1-5.

Seminar, Workshop & Conference Attended:

1. Attended 5 days “**Faculty Induction Workshop**” Conducted by TEQIP-III at **IIT Hyderabad** in 2018.
2. Attended different seminars by companies like **ANSYS, OPAL-RT TECHNOLOGIES, Comsol, MATLAB, Element14**.

3. Attended two day workshop on Virtual Instrumentation in LABVIEW Platform (**WVIL- 2016**) held at the Department of Electrical Engineering, **Indian Institute of Engineering Science and Technology, Shibpur**, Howrah – 711103.
 4. Attended the workshop of Soft Computing Driven Recent Advancement in Condition Monitoring of Electrical Equipment (“**SCDRACMEE- 2016**”) held at the Department of Electrical Engineering, **Indian Institute of Engineering Science and Technology, Shibpur**, Howrah – 711103.
 5. UGC-SAP Sponsored National Seminar on Embedded Systems in Instrumentation & Control (**ESIC-2013**) organized by Department of Electrical Engineering at **IEST, Shibpur** (BESU), Howrah-711103.
 6. Attended in the “**Industry-Academia** Special Bridge Course in Electrical Engineering” organized by Department of Electrical Engineering at **IEST, Shibpur** (BESU), Howrah-711103.
 7. Attended two-week workshop on Control Systems conducted by **IIT Kharagpur** under the National Mission on Education through ICT (**MHRD, Govt. of India**) in 2014.
 8. Attended two-week workshop on Signals & Systems conducted by **IIT Kharagpur** under the National Mission on Education through ICT (**MHRD, Govt. of India**) in 2013.
 9. UGC-SAP Sponsored National Seminar on Embedded Systems in Instrumentation & Control (**ESIC-2013**) organized by Department of Electrical Engineering at **IEST, Shibpur** (BESU), Howrah-711103.
 10. 2nd IEEE International Conference on Power, Control and Embedded Systems (**ICPCES 2012**), Allahabad, India.
 11. 6th National Power Electronics Conference 2013 (**NPEC 2013**) at **IIT Kanpur**.
 12. Attended Interational Workshop (**OPTENG 2014**) on Optimization in Engineering organized by BUIE.
 13. Attended National Conference on Mechatronics, Robotics and Automation (**NCMRA-2014**) organized by BUIE in association with **Institution of Engineers (India)**.
 14. Attended short term course Short Term Course on Power Electronics – 2014 (**STCPE 2014**) organized by **IEST, Shibpur**.
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Achievement:

- Served duty as a hostel warden at DBIT, Dehradun
- Question setter of different posts for SAIL examination
- Served duty as a coordinator of technical committee at Research Scholar's Day at IEST, Shibpur (BESU).
- Volunteer in “Value Education Workshop” organized by The Ramakrishna Mission Institute of Culture, Golpark, Kolkata.

Subjects of Interest:

Control Systems	Analog Electronics
Non-linear Control Systems	Digital Electronics
Measurement	Process Control
Instrumentation	Sensor & Transducers
Basic Electrical Engineering	Basic Electronics

Research Interests:

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|-------------------------------|------------------------------------|
| 1. Electromagnetic Levitation | 2. Optimization & Adaptive Control |
| 2. Instrumentation | 3. Applied System Theory |
| 4. Nonlinear Systems | |

B.Tech Final Year Dissertations:

1. Abhinandan Chauhan, Bhumika Sah, Gaurav Pant: Stability Analysis of Discrete Systems With Time Delay. (Completed, 2012)
2. Km. Akanksha Oli, Chetna Dumka, Amit Joshi: Stability Analysis of Discrete Systems With Actuator Saturation. (Completed, 2012)

Technical Languages Known:

- ANSYS Maxwell
- Autocad
- Kicad
- Matlab
- PIC18F6520 (Microcontroller)
- PIC18F452 (Microcontroller)
- FPGA
- Latex
- Sequel
- Linux
- Pspice
- Oscad
- Orcad
- FEMM
- Scilab
- Comsol

Languages Known:

English	Bengali	Hindi
√ Read	√ Read	√ Read
√ Write	√ Write	√ Write
√ Speak	√ Speak	√ Speak

Summer Internship:

- ❖ Organization- Durgapur Steel Plant, SAIL
Title- Project in SAIL
Duration-2 months

- ❖ Organization- WEBEL, CK-17 Saltlake, Kolkata
Title- Training in PLC, SCADA.
Duration-15th July 2009 - 13th August 2009

Hobbies:

- Playing & Watching Cricket
- Photography

Personal Details:

Nationality: Indian
Date of Birth: 15thMarch, 1988
Sex: Male
Fathers Name: Sanat Kumar Kundu
Hometown Bankura, West Bengal
Father's occupation: Retired Govt. employee
Mothers Name: Sasthi Kundu
Mother's occupation: Housewife

I hereby declare that all the information given is correct to the best of my knowledge.

Date:

Place: Kolkata

(Janardan Kundu)