RESUME

PAYALI DAS, PhD Scholar, (Thesis submitted) LinkedIn Profile | Google Scholar
Department of Electrical Engineering
Indian Institute of Technology Delhi
Date of Birth: 26/09/1994 Nationality: Indian Google Scholar Citation: 61
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ACADEMIC DETAILS:

YEAR	Degree/Exam	Institute	GPA/Marks
2019 onwards	PhD (EE)	Indian Institute of Technology, Delhi	8.5/10
2018	M.Tech (VLSI)	National Institute of Technology, Arunachal Pradesh	8.70/10
2016	B.E (ETCE)	Tripura Institute Of Technology (Tripura University)	73.7%

AREAS OF INTEREST:

Hardware Design, Analog and Low power VLSI, Embedded System, Internet of Things.

RESEARCH WORK:

PhD Thesis: Circuits and systems for smart IoT platforms.

- A solar energy harvested low-power, low-cost air pollution monitoring device has been developed with low low-power STM32 microcontroller and on-board NB-IoT communication module.
- A novel particulate matter (PM) sensor has been designed for PM2.5 and PM10 and implemented on the APMD. A PWM based duty cycling method has been utilised to reduce the power consumption of the sensor besides using an LED light scattering strategy.
- A simplified analog front end (AFE) has been designed for a UV spectroscopy based gas sensor module to detect SO2, NO2 and Ozone gas.
- A low-power smart IoT card has been designed for data smart energy metering applications.

M.Tech Thesis: A fast-locking charge pump circuit configuration for perfect currant matching.

- An operation amplifier based charge pump circuit has been designed in GPGK 90nm and UMC 28nm.

PUBLICATIONS:

Patents:

1. S. Chatterjee**, P. Das**, and S. De, “Simplified Signal Conditioning for UV spectroscopy based multiple gas sensing module”, applied for Indian Patent, FITT, IIT Delhi.
2. S. Chatterjee**, P. Das**, S. Ghosh, and S. De, "Pollution monitoring system and method thereof," applied for Indian Patent, ref. no. 202111043780, Sep. 2021, US Patent Application No- 17/ 954,019, Sep. 2022.

Journals:

1. **P. Das**, S. Chatterjee, and S. De, “UV Spectroscopy-based Gas Sensor Module for Air Quality Monitoring Application”, IEEE Sensor Journal. (Under Preparation) **[Impact Factor- 4.325]**
2. S. Ghosh, **P. Das**, S. De, S. Chatterjee and M. Portmann, "Local Reference-Free In-Field Calibration of Low-Cost Air Pollution Monitoring Sensors," in *IEEE Transactions on Instrumentation and Measurement*, vol. 71, pp. 1-13, 2022, Art no. 2517613, doi: 10.1109/TIM.2022.3203446. **[Impact Factor- 5.332]**
3. **P. Das**, S. Ghosh, S. Chatterjee and S. De, "A Low Cost Outdoor Air Pollution Monitoring Device With Power Controlled Built-In PM Sensor," in *IEEE Sensors Journal*, vol. 22, no. 13, pp. 13682-13695, doi: 10.1109/JSEN.2022.3175821. **[Impact Factor- 4.325]**
4. Saw, S.K., **Das, P.**, Maiti, M. et al. A power efficient charge pump circuit configuration for fast locking PLL application. Microsystem Technol 27, 479–491 (2021). **[Impact Factor- 2.012]**
5. **Das, P**. and Meher, P., 2018. Low power fast locking charge pump design for pll application. Jour of Adv Research in Dynamical & Control Systems, 10. **[Impact Factor- 1.20]**

Conferences (Total 10):

1. **P. Das**, S. Chatterjee, and S. De, “UV Spectroscopy-based Gas Sensor Module for Air Quality Monitoring Application”, in *Proc. IEEE SenNano*, Malaysia, September 2023.

2. S. Ghosh, **P. Das**, S. Chatterjee, M. Portmann, and S. De, **"**Energy Aware Smart Sensing and Implementation in Green Air Pollution Monitoring System," in *Proc. IEEE ICC*, Rome Italy, May 2023.
3. **P. Das,** S. Ghosh, W. A. Khan, S. Chatterjee, and S. De, "Prototype Implementation of Dynamic Data Pruning in Smart Energy Meter," *2021 IEEE Globecom Workshops (GC Wkshps)*, 2021, pp. 1-6, doi: 10.1109/GCWkshps52748.2021.9682119.
4. **P. Das** and A. Majumder, "Analysis of a Transistor Count Optimized Charge Pump for Telecommunication Application," *2021 Zooming Innovation in Consumer Technologies Conference (ZINC)*, 2021, pp. 91-95, doi: 10.1109/ZINC52049.2021.9499294.
5. **P. Das**, S. Ghosh, S. Chatterjee and S. De, "Energy Harvesting-enabled 5G Advanced Air Pollution Monitoring Device," *2020 IEEE 3rd 5G World Forum (5GWF)*, 2020, pp. 218-223, doi: 10.1109/5GWF49715.2020.9221330.
6. W. A. Khan, **P. Das**, *et al*., "Smart IoT Communication: Circuits and Systems," *2020 International Conference on COMmunication Systems & NETworkS (COMSNETS)*, 2020, pp. 699-701, doi: 10.1109/COMSNETS48256.2020.9027430.
7. **Payali Das**, Suraj Kumar Saw, Preetisudha Meher, "Design of Differential Amplifier Using Current Mirror Load in 90nm CMOS Technology", Information Systems Design and Intelligent Applications. Advances in Intelligent Systems and Computing, vol 862. Springer, Singapore, Mouritius. DOI: 10.1007/978-981-13-3329-3_39.

EXPERIENCE:

I. Designation- Junior Research Fellow.

Projest- 5G Energy Harvesting Air Pollution Monitoring System.
Supervisor- Dr. Shouri Chatterjee.
Indian Institute of Technology Delhi.
Duration- June 2019 to December 2019.

II. Designation- Project Associate.

Responsibility- Developing a low-cost, scalable and resilient IoT testbed.
Indian Institute of Technology, Mandi.
Supervisor- Dr. Srikant Srinivasan.
Duration- July 2018 to May 2019.

AWARDS:

1. Selected among the **top 10 participants for the 5G Hackathon, organised by Dept. of Telecommunication, Govt. of India**. 2022. Awarded INR 5 Lakhs.
2. Runner up in **Research Demo. IEEE COMSNETS**, 2020.
3. Received ACM Travel Grant to attend **ACM SIGMETRICS** 2022, IIT Bombay, India.

TECHNICAL PROFICIENCY:

1. IoT system design tool: Eagle PCB, Altium PCB, Diptrace PCB
2. Embedded software: STM Cube IDE, Arduino IDE
3. 3D Printing tool: DSS Solidworks, Autodesk Inventor
4. Circuit designing tools: Cadence Virtuoso, LT Spice, Multisim, Matlab Simulink
5. Operating system: Linux and Windows
6. Other tools: Matlab, Origin

REFEREES:

1. **Prof. Shouri Chatterjee- Professor, Indian Institute of Technology Delhi.**
   Address- Dept. of Electrical Engineering, IIT Delhi. Hauz Khas, New Delhi. 110016
   Email- shouri@ee.iitd.ac.in, Phone No. 9871803549
2. **Prof. Swades De- Professor, Indian Institute of Technology Delhi.**
   Address- Dept. of Electrical Engineering, IIT Delhi. Hauz Khas, New Delhi. 110016
   Email- swadesd@ee.iitd.ac.in, Phone No. 9958325145

ATTRIBUTES:

Highly motivated, strong work ethic, reliable, responsible, punctual, able to work successfully in a team environment, open to challenging and creative projects, hardworking and confident to face any situation in life.

Declaration:

I hereby declare that the information stated above is true to the best of my knowledge.

Date: 22.01.2024
Place: **New Delhi, India** **PAYALI DAS**