

PALLAV KUMAR DEB

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SWAN Lab, Dept. of Computer Science and Engineering

Indian Institute of Technology, Kharagpur 721302

EDUCATION

Indian Institute of Technology, Kharagpur

August 2017 - Present

Doctor of Philosophy

Department of Computer Science & Engineering

Tezpur University

August 2015 - August 2017

Master of Technology

CGPA: 9.2

Information Technology

Royal Group of Institutes, Gauhati University

August 2010 - August 2014

Bachelor of Engineering

Overall Percentage: 74.39

Department of Computer Science & Engineering

RESEARCH INTERESTS

Networking, resource allocation, fog computing, constrained devices, AI/ML-based solutions, Internet of Things, UAVs, Swarm of UAVs, e-health, THz communications, nano-networks.

WORK EXPERIENCE

National Programme on Technology Enhanced Learning (NPTEL)

Jun 2020 – Present

Teaching Assistant

- Introduction to Internet of Things (by Prof. Sudip Misra)

SensorDrops Networks Pvt. Ltd., Kharagpur

Dec 2018 – Present

R&D Consultant

- Developed multiple Internet of Things (IoT) devices dedicated towards addressing basic societal as well as industrial needs.
- Developed multiple Android applications for interacting with the IoT devices and also for other activities, such as sensing and actuating.
- Worked closely with the founders during the creation of SensorDrops Networks Pvt. Ltd.

Indian Institute of Technology, Kharagpur

Jun 2017 – Present

Teaching Assistant

- Programming and Data Structures Lab
- Software Engineering
- Architecture and Protocols for Internet of Things
- Cloud computing

Tezpur University

Jun 2015 – Jun 2017

Teaching Assistant

- Information and Communication Technology

- Introductory Computing
- Computer Graphics
- Computer Organization and Architecture

West Coast Frozen Foods Pvt. Ltd., Mumbai

Jul 2014 – Dec 2014

In-house Software Developer

- Assisted in creation of websites.
- Developed smart inventory system for incoming and outgoing packages.

WORK VISITS

Tata Consultancy Services, Innovation Laboratory

Kolkata

Demonstration of IoT-based wireless temperature sensing nodes from SensorDrops Networks Pvt. Ltd.

Calcutta Electric Supply Corporation Limited

Kolkata

Demonstration of IoT-based wireless condition monitoring nodes from SensorDrops Networks Pvt. Ltd.

Ceratizit Limited

Uluberia, West Bengal

Discussion for Industrial IoT and Industry 4.0 from SensorDrops Networks Pvt. Ltd.

PROJECTS

B.E.: Steganography

In this work, we take textual input from the user, which we convert to a picture of any format. We then use the least significant bit (LSB) routines for hiding the picture containing the textual data into another arbitrary picture. We then forward the superimposed image to designated receivers. On the receiving side, we provide routines for separating the images from one another. My team of 2 other members prepared this project towards the completion of our Bachelor of Engineering degree.

M.Tech: Human Activity Recognition from Video

This project lists the series of activities performed by people in a video. It consists of three steps – 1) Recognition of humans and objects in a video frame, 2) Identify nature of movement based on joint movements and angles, and 3) Finalize activity based on the objects that the human is using. This work involves the use of machine learning routines like Convolution Neural Network (CNN) and Hidden Markov Models (HMM). I prepared this project towards the completion of my Masters of Technology degree.

SkopEdge: A Smart Digital Stethoscope

2019 – Present

In this work, we developed a low-cost and easy-to-use digital stethoscope that records heart sounds and automatically counts the number of heartbeats. Due to changing network conditions, the stethoscope changes the quality of the audio files and sends it to remote locations. The results are then made available for analysis by remote doctors along with a visualization for the same. This work has been recently accepted for presentation at the IEEE International Conference on Communications (ICC) 2020, in Dublin, Ireland.

TECHNICAL STRENGTHS

Programming	C/C++, Java, Python, Android, HTML/PHP, Matlab
Tools	Tensorflow, OpenCV, Keras, and other machine learning frameworks
Software & Tools	MS Office, Latex, Docker

PROFESSIONAL AFFILIATIONS

2020 - Present	IEEE, Graduate Student Member
2020 - Present	IEEE Communications Society (ComSoc), Student Member

TEACHING ASSISTANTSHIPS

National Programme on Technology Enhanced Learning (NPTEL)	2020 – Present
<ul style="list-style-type: none"> • Introduction to Internet of Things 	
Indian Institute of Technology, Kharagpur	2017 – Present
<ul style="list-style-type: none"> • Introduction to Internet of Things • Cloud Computing • Software Engineering • Programming and Data Structures Lab 	
Tezpur University	Jun 2015 – Jun 2017
<ul style="list-style-type: none"> • Information and Communication Technology • Introductory Computing • Computer Graphics • Computer Organization and Architecture 	

WORKSHOPS AND TALKS

SGRIP-Sponsored Short Term Course on Modern Wireless Networks and IoT	October 2019
<i>IIT Kharagpur</i>	
Hands-on Session on IoT devices and Android programming.	
Guest Lecture: Online Mode	June 2020
<i>Jorhat Engineering College</i>	
Invited talk on <i>Introduction to Fog Computing</i> .	

PUBLICATIONS

JOURNALS

1. **P. K. Deb**, A. Mukherjee, and S. Misra, “XiA: Send-it-Anyway Q-Routing for 6G-Enabled UAV-LEO Communications”, in *IEEE Transactions on Network Science and Engineering* (Accepted, 2021)
2. **P. K. Deb**, S. Misra, and A. Mukherjee, “Latency-Aware Horizontal Computation Offloading for Parallel Processing in Fog-Enabled IoT” in *IEEE Systems Journal* (Accepted, 2021)
3. S. Misra, A. Mukherjee, and **P. K. Deb**, “Channel Modeling of IoT Phantom Networks: Communications in the THz Band.” in *Transactions of the Indian National Academy of Engineering*.

4. N. Pathak, **P. K. Deb**, A. Mukherjee and S. Misra, "IoT-to-the-Rescue: A Survey of IoT Solutions for COVID-19-like Pandemics," in *IEEE Internet of Things Journal*.
5. S. Misra, **P. K. Deb**, N. Koppala, A. Mukherjee and S. Mao, "S-Nav: Safety-Aware IoT Navigation Tool for Avoiding COVID-19 Hotspots", in *IEEE Internet of Things Journal*.
6. S. Misra, S. P. Rachuri, **P. K. Deb** and A. Mukherjee, "Multi-Armed Bandit-based Decentralized Computation Offloading in Fog-Enabled IoT," in *IEEE Internet of Things Journal*.
7. **P. K. Deb**, S. Misra, T. Sarkar and A. Mukherjee, "Magnum: A Distributed Framework for Enabling Transfer Learning in B5G-Enabled Industrial-IoT," in *IEEE Transactions on Industrial Informatics*.
8. R. Saha, S. Misra and **P. K. Deb**, "FogFL: Fog Assisted Federated Learning for Resource-Constrained IoT Devices," in *IEEE Internet of Things Journal*.
9. **P. K. Deb**, C. Roy, A. Roy and S. Misra, "DEFT: Decentralized Multiuser Computation Offloading in a Fog-Enabled IoV Environment", in *IEEE Transactions on Vehicular Technology*.

CONFERENCES

1. S. Misra, **P. K. Deb**, N. Pathak and A. Mukherjee, "Blockchain-Enabled SDN for Securing Fog-Based Resource-Constrained IoT", *IEEE INFOCOM Workshop*, Toronto, Canada, July 6-9 2020.
2. **P. K. Deb**, S. Misra, A. Mukherjee and A. Jamalipour, "SkopEdge: A Traffic-Aware Edge-Based Remote Auscultation Monitor", *IEEE International Conference on Communications (ICC)* 2020, Dublin, Ireland, June 7-11, 2020.

MAGAZINES

1. **P. K. Deb**, S. Misra, A. Mukherjee and S. Shaw, "Eaves: An IoT-Based Acoustic Social Distancing Assistant for Pandemic-Like Situations", *IEEE IoT Magazine* (Accepted, 2021)
2. **P. K. Deb**, A. Mukherjee and S. Misra, "CovChain: Blockchain-Enabled Identity Preservation and Anti-Infodemics for COVID-19", *IEEE Network Magazine* (Accepted, 2021)

BOOK CHAPTERS

1. **P. K. Deb**, S. Misra, A. Mukherjee and A. Bandyopadhyay, "Containing the Spread of COVID-19 with IoT: A Visual Tracing Approach", *Computational Modelling and Data Analysis in COVID-19 Research*, CRC Press, USA.

ACADEMIC ACHIEVEMENTS

1. Secured national rank in GATE 2015 for securing admission into M.Tech.
2. Received a *Honorary Mention* in the 2020 IEEE Communications Society Student Project Competition "*Communications Technology Changing the World*".

ACADEMIC REFEREE SERVICE

IEEE	IEEE Transactions on Vehicular Technology
IEEE	IEEE Transactions on Mobile Computing
IEEE	IEEE Transactions on Industrial Informatics
IEEE	IEEE Internet of Things Journal
IEEE	IEEE Systems Journal
IEEE	IEEE Journal on Selected Areas of Communications
IEEE	IEEE Internet of Things Magazine
IEEE	IEEE International Conference on Communications
IEEE	IEEE International IOT, Electronics, and Mechatronics Conference

EXTRA-CIRRICULAR

Co-Organized Counter Strike 2013 - a gaming event in Royal Group of Institutions.

Ranked 1660 in NIIT 8th national aptitude test.

Secured second position in movie making competition 2015 at Tezpur University.

Secured first position in movie making competition 2016 at Tezpur University.

PERSONAL TRAITS

Highly motivated and eager to learn new things.

Strong motivational and leadership skills.

Ability to work as an individual as well as in group.

REFERENCES

Prof. Sudip Misra	Professor Dept. of Computer Science and Engineering IIT Kharagpur Email: smisra@cse.iitkgp.ac.in, smisra.editor@gmail.com
Dr. Anandarup Mukherjee	Research Assistant Dept. of Engineering University of Cambridge, U.K. Email: am2910@cam.ac.uk
Dr. Shobhanjana Kalita	Assistant Professor Dept. of Computer Science and Engineering Tezpur University Email: kalitas@tezu.ernet.in
Dr. Arindam Karmakar	Assistant Professor Dept. of Computer Science and Engineering Tezpur University Email: arindam@tezu.ernet.in