Oshin Rawlley

CHANAKYA Ph.D Fellow, DRISHTI CPS Foundation, IIT Indore
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ORCiD Lab- 6021, Disruptive Technologies Lab, BITS Pilani

Profile

I am a Chanakya Ph.D. Fellow sponsored by DRISHTI CPS, Indian Institute of Technology Indore (IIT Indore). I have submitted my Ph.D. with the topic "Edge Computing-Enabled In-Situ Distributed Intelligent Mechanisms for Next-Generation Internet of Vehicles (IoV) Scenarios" under the supervision of Prof. Shashank Gupta at the Disruptive Technologies Lab in the Department of CSIS, Birla Institute of Technology and Science, Pilani, Pilani Campus. My broad area spans across Urban Mobility solutions, Edge Computing, and IoT. My target domain primarily includes Internet of Vehicles (IoV), EdgeAI, and Computer Vision in Autonomous Vehicles.

Education

Birla Institute of Technology and Science, Pilani — Rajasthan, India
Ph.D in Computer Science and Engineering — Nov 2020 – Present

Amity University — Noida, India
M.Tech in Computer Science and Engineering; ***CGPA: 8.59*** — Aug 2016 – June 2018

Rajiv Gandhi Proudyogiki Vishwavidalaya — Bhopal, India
B.Tech in Computer Science and Engineering; ***CGPA: 8.16*** — Aug 2011 – June 2015

Research Interests

Edge Computing, Urban Mobility, Computer Vision in Autonomous Vehicles, Modelling of Internet of Vehicles (IoV), IoT.

Research Projects

Title:	Development of AI-Empowered Vision-Based Driver Support System for Autonomous Vehicles
Funding Agency:	DRISHTI CPS Foundation IIT Indore
My Role:	Chanakya Ph.D Fellow
Description:	The project involves implementation of vision-based algorithms in a AI-assisted driving under varied environments.

Title:	Development of Low-Cost Federated Learning Empowered Digital Twin Framework for Structural Health Monitoring (SHM) of Roads and Bridges built under PMGSY
Funding Agency:	I-DAPT HUB FOUNDATION, Indian Institute of Technology (BHU) Varanasi.
My Role:	Project Associate
Description:	This project involves cyber-physical systems for maintaining structural health of the bridges using Digital Twin technology.

Publications

JOURNAL

Oshin Rawlley, Shashank Gupta, Jatin Panwar, Palak Sharma, and Shailendra Rathore. "Asynchronous Deep Reinforcement Learning for Semantic Communication and Digital-Twin Deployment in Transportation Networks." *IEEE Transactions on Intelligent Transportation Systems*, 2025. Published. **IF:8.4**

Oshin Rawlley, Shashank Gupta, Kashish Mahajan, Aishna Shrivastava, Esha Jain. "HS-GIoV: High-Speed Green Internet of Vehicles (IoV) Edge-Assisted Model for Low-Latency Inference in Autonomous Driving." *Future Generation Computer Systems, Elsevier*, 2025. Published. **IF: 6.1**

Oshin Rawlley, Shashank Gupta, Kashish Mahajan, and Shailendra Rathore. "Green-EMulTO: a next generation edge-assisted multi-level traffic orchestrator for green computing in consumer autonomous vehicles." *IEEE Transactions on Consumer Electronics*, Vol. 70, Issue 4, pp. 7291-7301, 2024. **IF: 10.9**

Oshin Rawlley, Shashank Gupta, Jyotsana Chandrakar, Manisha K. Johnson, and Chahat Kalra. "Artificial Intelligence Inspired Task Offloading and Resource Orchestration in Intelligent Transportation Systems." *Cognitive Computation, Springer*, Vol. 17, Issue 18, pp. 1-30, 2025. **IF:4.3**

Oshin Rawlley, Shashank Gupta, Hardik Kathera, Siddharth Katyal, and Yashvardhan Batwara. "Employing cross-domain modelings for robust object detection in dynamic environment of autonomous vehicles." *Multimedia Tools and Applications, Springer*, Vol. NA, Issue NA, pp. 1-47, 2024. **IF:3.6**

Oshin Rawlley and Shashank Gupta. "Artificial intelligence-empowered vision-based self driver assistance system for internet of autonomous vehicles." *Transactions on Emerging Telecommunications Technologies, Wiley*, Vol. 34, Issue 2, pp. e4683, 2023. **IF: 2.5**

Katyal Siddharth, Shashank Gupta, Oshin Rawlley and Debjani Ghosh. "A fog-driven three-factor authentication protocol for secure data sharing in Internet of Vehicles cyber-physical systems." *Concurrency and Computation: Practice and Experience, Wiley*, Vol. 36, Issue 8, pp. e7981, 2024.

Raj Meghna, N. B. Harshini, Shashank Gupta, Mohammed Atiquzzaman, Oshin Rawlley and Lavika Goel. "Leveraging Precision Agriculture Techniques using UAVs and Emerging Disruptive Technologies." *Energy Nexus, Elsevier*, Vol. NA, Issue NA, pp. 100300, 2024.

Gera Bhavya, Yuvraj Singh Raghuvanshi, Shashank Gupta, Oshin Rawlley, Amit Dua, and Parjanay Sharma. "Leveraging AI-enabled 6G-driven IoT for sustainable smart cities." *Journal of Communication Systems, Wiley*, Vol. 36, Issue 16, pp. e5588, 2023.

Mukherjee Suprakash, Shashank Gupta, Oshin Rawlley and Siddhant Jain. "Leveraging big data analytics in 5G-enabled IoT and industrial IoT for the development of sustainable smart cities." *Transactions on Emerging Telecommunications Technologies, Wiley*, Vol. 33, Issue 12, pp. e4618, 2022.

CONFERENCE

Oshin Rawlley, Shashank Gupta, Tanisha Bhattacharyya, and Shikhar Singh. "Optimizing Quality-of-Service (QoS) using Semantic Sensing and Digital-Twin in Pro-dynamic Internet of Vehicles (IoV)." *In 2024 IEEE 100th Vehicular Technology Conference (VTC2024-Fall), Washington DC, USA*, pp. 1-5, 2024.

Oshin Rawlley, Mahajan, Kashish, Shashank Gupta, and Shikhar Singh. "FMS: Enhancing Fleet Management Scheme with Long Term Low-Latency V2X Services and Edge-based Video Stream Analytics." *In 2024 IEEE Intelligent Vehicles Symposium (IV), Jeju Island, South Korea*, pp. 1822-1827, 2024.

Oshin Rawlley and Shashank Gupta. "PADAAV: Enhancing Perception Systems using GAN-generated Adversarial Augmented Domains for Autonomous Vehicles." *In 2023 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), Atlanta, Georgia (USA)*, pp. 148-153, 2023.

Ghosh Debjani, Hardik Katehara, Oshin Rawlley, Shashank Gupta, Naveen Arulselvan, and Vinay Chamola. "Artificial intelligence-empowered optimal roadside unit (rsu) deployment mechanism for internet of vehicles (iov)." *In 2022 IEEE 23rd International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), Belfast, United Kingdom*, pp. 495-500, 2022.

Oshin Rawlley and Shashank Gupta. "An Upgraded Object Detection Model for Enhanced Perception and Decision Making in Autonomous Vehicles." *In 2022 IEEE International Conference on Communications Workshops (ICC Workshops)*, pp. 1201-1205, 2022.

Oshin Rawlley and Shailendra Narayan Singh. "3-D modelling of multidimensional disparate data in visual analytics." *In 2018 4th International Conference on Computational Intelligence Communication Technology (CICT)*, pp. 1-5. IEEE, 2018.

BOOK CHAPTER

Oshin Rawlley, Yatendra Sahu, Rajeev Kumar Gupta, Amit Kumar Mishra, Ramakant Bhardwaj, and Satyendra Narayan. "A Computational Approach for Regulation of Biomedical Waste Expulsion in a Novel Coronavirus Pandemic." *In Mathematical and Computational Modelling of Covid-19 Transmission*, pp. 65-81. River Publishers, 2023.

Oshin Rawlley and Shashank Gupta. "Achieving ambient intelligence in addressing the COVID-19 pandemic using fog computing-driven IoT." *Advancing Smarter and More Secure Industrial Applications Using AI, IoT, and Blockchain Technology*, pp. 56-92 (2022).

Patents

- Oshin Rawlley, Shashank Gupta. **Vehicular Intelligent Vision and Adaption in Adverse Conditions.** Patent application filed at Indian Patent Office (IPO) with DRISHTI CPS IIT Indore and BITS Pilani, Rajasthan, under Indian patent application No. 202521027853.

Work Experience

VIT University — Bhopal, India
Lecturer – Introduction to Python — Sept 2020 – Nov 2020

Sagar Institute of Science and Technology — Bhopal, India
Assistant Professor (CSE) — Feb 2019 – Nov 2019

Professional Activities

- Presented a paper and poster at the IEEE Intelligent Vehicles Symposium (IV 2024), Jeju Island, South Korea.
- Presented a paper at the IEEE 100th Vehicular Technology Conference (VTC2024-Fall), Washington DC, USA.

- Presented a paper in the 21st International Conference on Pervasive Computing and Communications (PerCom 2023), Atlanta, Georgia, USA.
- Delivered a paper presentation at the IEEE International Conference on Communications (ICC), Seoul, South Korea.
- Successfully completed a Certification Level 1 in IoT and IoE from the TIH Foundation, with participation recognized by IIT Bombay.

Teaching Assistantships

CS F213 - Object-Oriented Programming	Instructor(s): Prof. Avinash Gautam	Spring 2024
CS F213 - Object-Oriented Programming	Instructor(s): Prof. Avinash Gautam	Autumn 2024
CS F213 - Object-Oriented Programming	Instructor(s): Prof. Avinash Gautam	Spring 2023
CS F213 - Object-Oriented Programming	Instructor(s): Prof. Avinash Gautam	Autumn 2023
CS F214 - Logic in Computer Science	Instructor(s): Prof. Jagat Sesh Challa	Spring 2022
CS F111 - Computer Programming	Instructor(s): Prof. Jagat Sesh Challa	Autumn 2022
CS F211 - Data Structures and Algorithms	Instructor(s): Prof. Vishal Gupta	Spring 2021
CS F214 - Logic in Computer Science	Instructor(s): Prof. Jagat Sesh Challa	Autumn 2021

Mentoring Students

Debjani, Harshini	Optimal deployment of RSUs maximizing the V2I communication	(2021)
Yashwardhan Batwara	Optimization of lightweight algorithms for faster inference on vehicles	(2022)
Jyotsana Chandrakar, Chahat Kalra	Mathematical formulations and topological analysis of vehicular communications with urban and partial rural scenarios	(2022)
Kashish Mahajan	Designing of light-weight algorithms	(2023)
Shikhar Singh	Synthetic data generation using simulators / Development of a lab testing environment	(2023)
Priyansh Patel	Deployment of AI algorithms on NVIDIA edge devices / Development of a lab testing environment	(2024)
Jatin, Kirti, Jyotsana	Energy footprint analysis for AI lightweight models	(2024)

Technical Skills

Programming Languages: C, C++, Java, Python, and database management system (Oracle)
Research Software: LaTeX, Mendeley Reference Manager, Smart Draw, Visio
Operating Systems: Basics of MS Windows, Ubuntu
Windows Applications: Microsoft Word, Excel, PowerPoint
Development Tools : Pytorch, Anaconda, Pandas
Web Development : HTML, CSS, Java script

Professional Memberships

- IEEE Student Member- #97841089
- ACM Student Member- 6790855
- Affiliate member of DRISHTI CPS, IIT Indore

Reviewer in peer-reviewed Journals

- Ad Hoc Networks
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Network and Service Management
- IEEE Transactions on Mobile Computing
- IEEE Communications Magazine
- Artificial Intelligence
- IEEE Transactions on Green Communications and Networking
- IEEE Vehicular Technology Magazine
- ACM Transactions on Internet Technology
- Cluster Computing
- IEEE Journal of Biomedical and Health Informatics
- Wireless Personal Communications
- The Journal of Supercomputing
- Multiscale and Multidisciplinary Modeling, Experiments and Design

Awards

- 2024: Received International Travel Support (ITS), Anusandhan National Research Foundation (ANRF) for paper presentation in South Korea.
- 2022: Received CHANAKYA Fellowship of IITI DRISHTI CPS Foundation under the National Mission on Interdisciplinary Cyber Physical System (NM-ICPS) of Department of Science and Technology, Government of India.
- 2020-2021 Received Institute Fellowship of Birla Institute of Technology and Science (BITS) Pilani, Pilani campus, Rajasthan, India.

Academic Achievements

Secured 1st position in the Mtech Final year

Personal Details

My Name:	Oshin Rawlley
Gender:	Female
Category:	General
Date of Birth:	08.06.1993
Religion:	Hinduism
Father's Name:	Dr. R.K Rawlley
Mother's Name:	Dr. Anju Rawlley
Nationality:	Indian
Passport No.:	V3384863
Personal Interests:	Article/Blog writing, Nature enthusiast, Basketball

References

1. **Prof. Shashank Gupta**, Associate Professor, Birla Institute of Technology and Science, Pilani, Rajasthan.
   Email: shashank.gupta@pilani.bits-pilani.ac.in
2. **Prof. Shailendra Rathore**, Division of Cyber Security, School of Design and Informatics, Abertay University, UK
   Email: s.rathore@abertay.ac.uk

Self declaration

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