

CV-CHARU SHARMA

Charu Sharma obtained her bachelor's degree in Instrumentation and Control Engineering from India. She did her master's degree in power system from National Institute of Technology, Hamirpur, India in 2009. She completed her PhD degree in Electrical Engineering from Indian Institute of Technology (IIT) Roorkee, India in 2015. Currently she is working as an Associate Professor at University of Tromsø, Narvik, Norway. Her research interests include power system stability studies, smart grids and energy systems integration.

Personal information

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|---------------------------|---|------|--------|
| First name, Surname: | Charu Sharma | | |
| Date of birth: | 12-04-1984 | Sex: | Female |
| Nationality: | Norway | | |
| URL for personal website: | https://uit.no/ansatte/person?p_document_id=476036 ; https://www.norceresearch.no/en/persons/charu-sharma/42188176 | | |

Education

| Year | Faculty/department - University/institution - Country | Percentage /CGPA |
|-----------------------|---|------------------|
| August 2015-June 2016 | Completed one-year Norwegian Language Course | |
| Dec. 2009-June 2015 | Ph.D., Electrical Engineering, Indian Institute of Technology (IIT) Roorkee, Roorkee, India | 9/10 |
| | Topic: <i>Placement of Phasor Measurement Units and control of rotor angle stability in Power systems</i> | |
| June 2007-June 2009 | Master, Power Engineering, National Institute of Technology (NIT) Hamirpur, Hamirpur, India | 8.47/10.0 |
| | Topic: <i>Artificial Intelligent Technique for Short Term Load Forecasting</i> | |
| June 2002-June 2006 | Bachelor's, in Instrumentation and Control, Graphic Era Institute of Technology, Dehradun, India, Dehradun, India | 77.2% |
| June 2001 | I.S.C Board (XII Class), ST.Johns School, Roorkee , India | 59.5% |
| June 1999 | I.C.S.E Board(X Class), ST.Johns School, Roorkee , India | 78.6% |

Work Experience

| Year | Position | University |
|----------------------------|--|-----------------------|
| September 2025—till date | Senior Scientist | NORCE, Norway |
| 2017-August 2025 | Associate Professor (100%) | UiT, Narvik, Norway |
| August 2016-December 2016 | Associate Professor (100%) (Substitute) | UiT, Narvik, Norway |
| September 2014-August 2015 | Assistant Professor (100%) | UPES, Dehradun, India |
| August 2009-December 2009 | Lecturer | GEIT, Dehradun, India |
| August 2006-July 2007 | Teaching Associate | GEIT, Dehradun, India |

** I was on parental leave (according to the Norwegian Law) from *August 2019-December 2021*, as I am blessed with twin girls

Supervision of students

PhD Thesis Supervised in UiT, Narvik

1. 'Voltage Control in Smart Distribution System with high Penetration of Distributed Energy Resources', Candidate: Raju Wagle, *PhD Thesis, 2023, Role:co-supervisor*
2. 'Advance monitoring and control techniques to enhance power network interoperability', Candidate: Issac K. Aidoo, status: ongoing, Role: Main supervisor

Master Thesis Supervised in UiT, Narvik – Total 13

1. Flexibility and its role in Capacity and Congestion Management, Mohammad Ibrar,2024
2. Study of virtual Inertia and its impacts on Power oscillations , Muhammad Ibrar, 2024
3. Wide Area Control and improvement of Dynamical states of Power system , Afsin Nazari,2024
4. Impact of Inverter Based Resources on System Stability in Low Inertia Power System Network, Zafar Raja, Hasnain, Master thesis, 2023-05-20
5. Optimization of industrial power grid of Narvik, Md Nafis Ul Hoq, Master thesis, 2023-05-20
6. Modeling and analysis of power system oscillations using real-time simulator. Sandberg, Andreas, Master thesis, 2022-05-16
7. Study of Inter Area Oscillations Using Phasor Measurement Units Olsen, Henrik,Master thesis, 2021-05-18
8. Isolated Renewable Energy systems transitions for Dynamic Configuration, Ania Fosli, June 2019
9. Intelligent load frequency control in an isolated wind-solar PV-micro turbine-diesel based micro-grid using V2G integration Addisu, Wondwosen Eshetu , Master thesis, 2017-06-12
10. Dynamic instability in weak transmission network due to wind power generation, Silje Mari Amundsen-Flage, Master's thesis in Electrical Engineering, 2017
11. Effect of placement of PMUs on state estimation in a power system, Mironov, Iurii (Master thesis; Mastergradsoppgave, 2016-11-07
12. Optimal placement of PMUs considering logical topology of communication medium, Nikumbh, Bhushan Madan, Master thesis, 2016-11-07
13. Optimal placement of PMU considering Communication Channel Limits in a Smart Grid, Harpal Singh, May 2015

Bachelor Thesis Supervised in UiT, Narvik

1. 'Implementering av bærekraftig energiproduksjon for Jaro AS', *Bacheloroppgave i elkraftteknikk, Børge Bellika, Martin Luitjes Hansen, Mai 2023*
2. 'Vannturbinlab', *Bacheloroppgave i elkraftteknikk , Kristen Karbøl og Florian Schäffer, mai 2022*

3. 'Estimering av overført potensialet til bygninger nær kraftledninger', Lillian Gåre Pedersen og Bjørnar Turi, Bacheloroppgave i elkraftteknikk, mai 2021
4. 'Smart infrastruktur Nord-Senja', *Bacheloroppgave i elkraftteknikk*, Einar Røste og Adrian Johansen, Mai 2019
5. 'Teknisk-økonomisk analyse av tiltak for å forbedre forsyningssikkerhet til Håkvikområdet'
6. *Bacheloroppgave i elkraftteknikk*, Daniel Arnesen, Vegar Holmgren og Svein Joar Husjord, Mai 2018
7. 'Lynoverspenninger i distribusjonsnettet', *Bacheloroppgave i elkraftteknikk*, Marius Stenersen, Håvard Wiborg og Tobias Thorsen, Mai 2018
8. 'Prosjektering av solcelleanlegg for bedrift i Alta', *Bacheloroppgave i elkraftteknikk*, Ole Mathias Rasmussen, Knut Børge Edvardsen og Unn Hege Thomassen, Mai 2017

1. Research Projects:

A. Ongoing Projects-

| S.No. | Project Title | My Role | Budget and Funding Body | Year | External Partner |
|-------|--|---------|-------------------------------------|-----------|------------------|
| 1. | Wave Energy Research Center in Northern Norway (WENor) | Co-PI | 1.37 Million NOK (MNOK) Arktis 2030 | 2024 | Energi i Nord |
| 2. | Multi-disciplinary Study of Atmospheric Ice Accretion Physics & Developing Optimal Technological Solutions to Minimize Ice Accretion Effects, nICE | Co-PI | 25.2 MNOK RCN, Norway | 2022-2026 | - |
| 3. | A step forward to better understand the ice accretion physics and develop innovative technological solutions arcICE | Co-PI | 15 MNOK UiT Strategic | 2021-2025 | - |

B. Completed Projects-

| S.No. | Project Title | My Role | Budget and Funding Body | Year | External Partner |
|-------|---|---------|-----------------------------|------|------------------|
| 1. | Consumers Determine the Expansion of the Smart Grid Market Through Informed Decisions and Collective Actions: CODEX | PI | 70000 NOK PES H2020 Funding | 2019 | - |

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|----|--|-------|-------------------------------|-----------|--|
| 2. | Advanced Distribution Level Intelligence by Controllability Enhancement-ADVICE | PI | 0.2 MNOK PES H2020 Funding | 2019 | NORCE, IERC, Alborg, UPC, DSO Turkey, Schneider Electric , Seven Solutions, and UFI |
| 3. | Deployment of Renewable Energy Resources in Arctic Region | Co-PI | 0.25 MNOK UArctic Allocation, | 2017-2018 | Alborg, Denmark UiA, Agder University of the Faroe Island |
| 4 | SMART ARCTIC BUILDING | Co-PI | 2MNOK Enova | 2018-19 | OMTBBL Enerconsult AS Smart Arctic TC Nordkraft Longyearbyen lokalstyre Polarlys Boligbyggelag i Finnmar |
| 5. | Low carbon energy self-sufficient community” Acronym: Arctic Energy | Co-PI | 2 MEUR Interreg Nord | 2016-18 | NORUT Narvik, LTU Luleå, Micropolis |

Expert Talk:

- 1) Given an expert Lecture in J.C.Bose University , Haryana , 29 August , 2023, India .

Certification Courses completed:

- 1) The Physical and Financial Power Markets, Issued on: 1 Dec 2022, Issued by Nord Pool Academy,
Verify: <https://www.credly.com/badges/a6f58eba-2167-451b-9766-2566ff68a5c0>
- 2) Certified Compliance Course, Issued on: 22 MAR 2023, Issued by: Nord Pool Academy,
Verify: <https://www.credly.com/go/5m5bWgAu>
- 3) Completed Development Program for Research Supervision, UNIPED 600, 16/06/2023.

Awards & Fellowships:

- Received Institute Fellowship sanctioned by Ministry of Human Resource and Development, India. *Amount:* Indian Rupees (IRs). 10 000/- per month plus IRs. 20 000 per year contingency (Jan 2010- June 2014).
- Cleared Graduate Aptitude Test in Engineering (GATE-2007) and received Institute Fellowship sanctioned by Ministry of Human Resource and Development, India. *Amount:* Indian Rupees (IRs). 5 000/- per month plus IRs. 8 000 per year contingency (2007-2009).
- Awarded gold medal for academic performance in bachelor studies from year 2002-2006 in Graphic Era University in Instrumentation and Control Engineering Department, Dehradun, India.

Research Interests-

- Smart Grids
- Wide Area Monitoring and Control
- Effect of the High Penetration of converter based generation resources on the transmission and distribution levels
- Power System Operation and Control
- Power System Stability
- Power Markets

Journal Publications-

1. L. N. H. Pham, A. Shrestha, **C. Sharma**, and F. Gonzalez-Longatt, "Digital Twins and Cyber-Physical Systems Toward the Digitalization of Power and Energy Systems," in *IEEE Transactions on Technology and Society*, vol. 6, no. 4, pp. 393-410, Dec. 2025, doi: 10.1109/TTS.2025.3615624.
2. R. Wagle, P. Sharma, **Charu Sharma**, M. Amin, J. L. Rueda, and F. Gonzalez-Longatt, "Optimal power flow-based reactive power control in smart distribution network using real-time cyber-physical co-simulation framework," *IET Gener. Transm. Distrib.*, Feb. 2023.
3. R. Wagle, P. Sharma, **Charu Sharma**, M. Amin, and F. Gonzalez-Longatt, "Real-Time Volt-Var Control of Grid Forming Converters in DER-enriched Distribution Network," *Front. Energy Res.*, no. January, pp. 1–18, 2023.
4. R. Wagle, P. Sharma, **Charu Sharma**, and M. Amin, "Optimal Power Flow based Coordinated Reactive and Active Power Control to mitigate voltage violations in Smart Inverter Enriched Distribution Network," *Int. J. Green Energy*.
5. Raju Wagle, Pawan Sharma, **Charu Sharma**, Terje Gjengedal, Chittaranjan Pradhan, "Bio-inspired hybrid BFOA-PSO algorithm-based reactive power controller in a standalone wind-diesel power system" *International Transactions on Electrical Energy Systems*, Accepted, Level 1.
6. **Shiraliyan, Mahyar; Sharma, Pawan; Sharma, Charu**. Automatic reactive power control of isolated wind-diesel hybrid power system using artificial bee colony and gray wolf optimization, *International Journal of Green Energy* 2018. ISSN 1543-5075.s 1 - 16. *Impact Factor-1.302*.
7. **Charu Sharma**, Barjeev Tyagi, "Ranking of Phasor Measurement Units based on Control strategy for Small signal Stability" *International Transactions on Electrical Energy Systems*, Vol. 25, Issue 10, pp. 2359-2375, 2015.

8. **Charu Sharma**, Barjeev Tyagi, “Fuzzy Type-2 Controller Design for Small Signal Stability Considering Time latencies and Uncertainties in PMU Measurements” *IEEE Systems Journal*.
9. **Charu Sharma**, Barjeev Tyagi, “An Approach for Optimal placement using Binary particle Swarm Optimization with Conventional Measurements” *International Journal of Engineering, Science and Technology*, Vol. 3, no.3, pp. 56-63, April 2011.

Book Chapters-

1. R. Wagle, P. Sharma, **Charu Sharma**, and M. Amin, “Real-time price based optimal energy mix in smart distribution network,” in Recent Developments in Electrical and Electronics Engineering, Lecture Notes in Electrical Engineering 979, https://doi.org/10.1007/978-981-19-7993-4_18, 2022.

Major Conference Paper-

1. Aidoo, I.K., Sharma, C., Sharma, P. (2026). Inverter Based Resource Complemented Control Using Immune Response Analogy. In: Singh, M., *et al.* Proceedings of the UNIFIED Conference of DAMAS, InCoME VIII and TEPEN Conferences. UNIFIED 2024. Mechanisms and Machine Science, vol 181. Springer
2. Taghavi, M., Perera, L.P., Sharma, C., Sharma, P., Wang, Y. (2025). Feasibility Study of Wave Energy Harvesting in Northern Norway. In: Spyrou, K.J., Themelis, N. (eds) Innovations in Sustainable Maritime Technology—IMAM 2025. IMAM 2025. Springer.
3. Ibrar, M., Sharma, C., Sharma, P. (2026). Sequential Hybrid Solution to Alleviate Congestion Utilizing Distributed Generations and FACTS Devices in the Power Network. In: Singh, M., *et al.* Proceedings of the UNIFIED Conference of DAMAS, InCoME VIII and TEPEN Conferences. UNIFIED 2024. Mechanisms and Machine Science, vol 185. Springer
4. Raju Wagle, Pawan Sharma, etc, Co-simulation frameworks between Typhoon HIL and OpenDSS for Real-Time simulation, IEEE ISGT Asia 2022, Accepted and Presented (*The paper was nominated for best paper award at first stage when it was accepted, there were 11 papers which one were nominated for best papers, and we were one of them. But they had to select one finally and we lost there*).
5. Raju Wagle, Gioacchino Tricarico, Pawan Sharma, Charu Sharma, Jose Rueda Torres and Francisco Gonzalez-Longatt: A Testbed for Modeling Active Distribution Systems Using Cyber-Physical Co-Simulation, 2022 22nd National Power Systems Conference, IEEE, India, Accepted.
6. Raju Wagle, Mr. Gioacchino Tricarico, Dr. Pawan Sharma, Dr. Charu Sharma, Dr. Jose Rueda Torres and Prof. Francisco Gonzalez-Longatt: Experiences in a Cyber-Physical Co-Simulation Testbed Development for a Smart-er Distribution Network, 2023 IEEE PES Conference on Innovative Smart Grid Technologies - Middle East, Accepted and Presented.
7. R. Wagle, P. Sharma, **Charu Sharma**, and C. Pradhan, "Perturbation and Observer Based Sliding-Mode Controller for Excitation control in Single-Machine Infinite

- Bus System," 2021 22nd IEEE International Conference on Industrial Technology (ICIT), Valencia, Spain, 2021, pp. 87-92, doi:10.1109/ICIT46573.2021.9453522.
8. R. Wagle, G. Tricarico, P. Sharma, **Charu Sharma**, J. L. Rueda, and F. Gonzalez-Longatt, "Cyber-Physical Co-Simulation Testbed for Real-Time Reactive Power Control in Smart Distribution Network," in 2022 IEEE Innovative Smart Grid Technologies - Asia (ISGT ASIA), 2022.
 9. Pawan Sharma , Charu Sharma: Automatic Reactive Power Compensation of an Isolated Wind-Diesel Hybrid Grid, IEEE International Conference on Industrial Technology (ICIT) 2018, Lyon, France.
 10. Wondwosen Eshetu, Pawan Sharma, Charu Sharma, ANFIS Based Load Frequency Control in an Isolated Micro Grid, IEEE International Conference on Industrial Technology (ICIT) 2018, Lyon, France.
 11. **Charu Sharma**, Barjeev Tyagi, "Sequential PMU Placement To Monitor Power Flow In Integrated Power Systems" in Proceedings of *IEEE PES Transmission and Distribution Conference and Exposition-2014*, Chicago, USA, 9-14 April 2014.
 12. **Charu Sharma**, Barjeev Tyagi, "Fuzzy Controller Design Considering Time Latencies in Communication Networks" Proceedings of *17th National Power Systems Conference, (NPSC-2012)*, Department of Electrical Engineering, IIT-BHU Varanasi, 12-14 December 2012.
 13. **Charu Sharma**, Barjeev Tyagi, "Transient stability status predictor based on relevance vector machine, 2013 IEEE Innovative Smart Grid Technologies-Asia (ISGT Asia)
 14. Francisco Gonzalez-Longatt, Marta Molinas, **Sharma Charu**, Preliminary Design of Wide Area Monitoring Infrastructure for Norwegian Power System using Low-Cost PMU, 2019 Nordic Workshop on Power and Industrial Electronics (NORPIE)
 15. **Charu Sharma**, Barjeev Tyagi, Wide area fuzzy controller design considering time latencies in communication networks, 2012, Proc. NPSC