

Akhil Kunche

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ACADEMIC QUALIFICATIONS

Ph.D. in Operations Research, Politechnika Wroclawska, Poland. May 2023.

M.S. in Computer Engineering, Politechnika Wroclawska, Poland. August 2017.

B.Tech. in Computer Science and Engineering, Symbiosis Institute of Technology, India. July 2015.

PROFESSIONAL EXPERIENCE

Project Manager (R&D), FirstESCO India Pvt. Ltd., Hyderabad, India, September 2021 – Present

Company specialising in waste heat recovery power systems and alternative fuel combustion systems

- Researching and managing experiments on various pilot-scale and lab-scale projects related to CO2 mitigation, water conservation, and industrial effluent processing.
- Working on renewable power plant projects in India, Middle East and Africa.

Project Engineer, FirstESCO India Pvt. Ltd., Visakhapatnam, India, August 2017 – September 2021

- Worked on PLC/SCADA (Supervisory Control and Data Acquisition) systems for power plant automation.
- Involvement in design of system logic for solid fuel combustion systems using petcoke for glass melting furnaces.
- Development of system PFD and animations for ORC Power systems.

Teaching Assistant, Politechnika Wroclawska, Poland, February 2019 – July 2022

Public University in Wroclaw, Poland

- Managed and taught courses at Masters level in topics such as Information Systems Management and Discrete Optimisation & Network Flows.

INTERNSHIP

Trainee Intern, Visakhapatnam Port Trust, Visakhapatnam, India, January 2014 – July 2014

Organisation responsible for the operation and maintenance of the port of Visakhapatnam

- Worked on a tidal height prediction system in order to improve the planning of ship berthing schedule and optimise fuel consumption. My work included development of a mathematical model to estimate the height of the tide at any given time
- Worked on the digitisation of the grievance handling method within the organisation, by implementing a grievance management system through a web portal. My work included design and development of the underlying MS-SQL database.

ACADEMIC PROJECTS

Title: Using computer simulation as a tool for designing optimal strategies of fuel mix for industries to comply for SOx and Nox emission standards in Industrial boilers, October 2022 – December 2022

- Designed and developed a System Dynamics simulation model to analyze and optimize fuel-mix configurations in industrial boilers, reducing SOx, NOx, and CO2 emissions while maintaining financial sustainability.

Title: Computer simulation as a decision-support tool for selecting CO2 emission reduction strategies in the cement industry, October 2018 – July 2022

- Designed and developed a flexible decision-support tool using system dynamic simulation approach that could be adapted for any individual cement plant to devise reactionary strategies to comply with future CO2 emission policies while minimising plant expenditure.

Title: Interactive Mobile Support System for Sports Training, Master's dissertation topic, November 2016 – July 2017

- Investigated and explored the possibility of using Heart Rate Restitution as a means of assessing fitness and performance of an athlete, and thereby providing additional assistance during training. The project also involved the development of a tool to autonomously extract and identify relevant parts of the Heart Rate data recorded using a wearable mobile device.

Title: Weather Prediction using Artificial Neural Networks, October 2016 – February 2017

- Utilised Multilayer perceptron (MLP) for training and prediction of a range of weather attributes for selected cities in Polska.
- Also investigated the variance in root mean square error (RMSE), when the model is trained with MLP in different epoch and hidden layer configurations.

Title: Paytooth – Peer to Peer Payment System, Bachelor's thesis, January 2015 – July 2015

- Designed and developed a decentralised, peer to peer cashless money transfer system, and explored the idea of completely offline payments.
- Studied and implemented Bluetooth as a peer-to-peer communication protocol for the payments.

Title: Educational Portal for Student – Teacher interaction, March 2016 – July 2016

- Designed and developed an E-Learning web platform using core software development principles, on the lines of *Moodle*, for fostering efficient assessment of students and their interaction with teachers.

Title: Minesweeper, January 2012 – March 2012

- Designed and developed a game similar to *Minesweeper* using Java Swing framework for the GUI.

PUBLISHED PAPERS

- Kunche, A., & Mielczarek, B. (2023). Using Simulation Modelling for Designing Optimal Strategies of Fuel Mix to Comply for SO_x and NO_x Emission Standards in Industrial Boilers. *Energies*, 16(1), 149.
- Kunche, A., & Mielczarek, B. (2021). Application of system dynamic modelling for evaluation of CO₂ emissions and expenditure for captive power generation scenarios in the cement industry. *Energies*, 14(11), 3115
- Kunche, A., & Mielczarek, B. (2021). Application of system dynamic modelling for evaluation of carbon mitigation strategies in cement industries: A comparative overview of the current state of the art. *Energies*, 14(5), 1464.
- Patel, R., Kunche, A., Mishra, N., Bhaiyat, Z., & Joshi, R. (2015). Paytooth - A cashless mobile payment system based on Bluetooth. *International Journal of Computer Applications*, 120(24), 38–42.
- Patel, R., Kunche, A., Mishra, N., Bhaiyat, Z., & Joshi, R. (2015). Comparative Review Of Existing Mobile Payment Systems. *International Journal of Applied Engineering Research*, 10, Number 7, 16873–16884.

PROFESSIONAL SKILLS

Simulation modelling; Data Analysis & Mathematical modelling; Programming & Software development (Python, Java, & SQL); Machine learning (ANN & MLP); Project & Research Management; Teaching & Scientific writing.

CERTIFICATIONS & MISCELLANEOUS ACTIVITIES

- Certificate in Patent Filing and Search, Rajiv Gandhi National Institute of Intellectual Property Management (RGNIIPM), Nagpur. Five Days Professional Skill Development Training Program on "Patent Filing procedure in India, Patent Search with exercise, Patent specification, claims writing with exercise". March 19-23, 2018
- Animal Shelter Volunteer at EKOSTRAŻ, Wrocław. Provided care and enrichment for animals, including feeding, cleaning enclosures, and assisting with walks/socialization. Supported shelter operations, ensuring a safe and hygienic environment for rescued animals.