**GAURAV TRIPATHI**

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# **Professional Summary**

* **Research & development in Artificial Intelligence & Computer Vision**
* Key interest in **Machine Learning Algorithms, Deep Learning Algorithms, Convolutional Neural Networks, LSTM.**
* Research & development of **large** and **complex** network-based and **distributed Command & Control Software Systems** for **Indian Army, Navy, and Coast Guard.**
* Experience in working on both **Linux/ Windows** platforms & environments.
* Providing thought leadership to modern IT engineering teams - developing point of view on modern architectures (infrastructure/ platforms/ applications), comparisons of technology choices, publishing standard conference/journals paper.

**Key Skills (in no priority order)**

* Computer Vision • Deep Learning
* Machine Learning • Data Structure
* Linux/Unix • Python/C++, STL
* Project management & multi-tasking • Computer Vision-Based Smart City Projects

# **Work History**

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| **Central Research Laboratory,**  **Bharat Electronics Limited (PSU)** | **Member (Senior Research Staff)** | **Sep 2007 to present** |

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| **Project Name** | **Brief description** | **Responsibilities** |
| Battlefield Surveillance System | * Developed a Battlefield Surveillance System with the capability to fuse multiple sensors reports from heterogeneous sensors. * Provides an overview of the battlefield on a military map * Based on 5 levels of data fusions of the JDL model * Data fusion server for displaying a common operational picture. | Solution Architect & Development |
| Coastal Surveillance System of Mauritius and Indian Coast Guard | Designed a Costal surveillance system for 7500 Kms of Indian coastlines & Mauritius coast guard  Enable surveillance through sensors like AIS, RADAR, GPS and correlates input to present a tactical display at the human-computer interface | Solution Architect & Development |
| Command and Control Center | * This project was developed for the Indian Army to cater to the need of their respective airpower which they can use at low altitude and in case of the rescue mission as well as any offensive operation. * It’s a small system that is integrated with the other indigenous system. * This system is successfully used for controlling flights at different places in a war zone where the height of helicopters is below 100 meters. | Solution Architect & Development |
| Marine Domain Awareness and Decision Support system | * This project was developed for the Indian Navy. It’s a project with a dynamic configuration. * This software is responsible for providing a complete picture of ships all around the world. | Solution Architect & Development |
| Image Classification Using Deep Learning for Smart City Vertical and Decision Support system | * This project was developed for the Smart City project for Solid Waste management. * Based on microarchitecture, this uses a REST API format for results. * The deep learning model was trained and deployed on AMAZON EC2 and was integrated with an Android App. * The software was used for the classification of images into various domains. * Detailed technical architecture and capability assessment of Order Management, Middleware, and Integration layer (Microservices). Providing recommendations and roadmap to improve/transform applications in these layers for future sustainability and business growth | Solution Architect & Development |
| Object Detection in Satellite Images | * Small object detection like ships, aircraft in satellite images | Solution Architect & Development |
| Land Use Land Cover solution in satellite Images | * Land Use / Land Cover (LULC) generally refers to the categorization or classification of human activities and natural elements on the landscape within a specific time frame based on established scientific and statistical methods of analysis of appropriate source materials. It has various methods of classification. | Solution Architect & Development |

# **Research Publications**

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| **Title** | **Publication** | **Year** |
| **EOI: Entity of Interest Based Network Fusion for Future Services** | International Conference on Hybrid Information Technology | 2011 |
| **A survey of Internet-of-Things: Future vision, architecture, challenges and services** | 2014 IEEE World Forum on Internet of Things (WF-IoT) | 2014 |
| **Content centric battlefield visualization mechanism and solutions** | 16th International Conference on Advanced Communication Technology | 2014 |
| **Scale Free Network Management Mechanism for an Intelligent Battlefield System** | International Journal of Advancements in Computing Technology | 2014 |
| **SEE: A Smart-Eye for Intelligent Transportation System** | The 2nd International Symposium on Advanced and Applied Convergence (ISAAC 2014), | 2014 |
| **Secure layers-based architecture for the Internet of Things** | 2015 IEEE 2nd World Forum on Internet of Things (WF-IoT) | 2015 |
| **Heterogeneous Crowd Sourcing and Data Fusion Model for disaster Management Services.** | Journal of Theoretical & Applied Information Technology | 2016 |
| **Semantic edge computing and IoT architecture for military health services in the battlefield** | 2017 14th IEEE Annual Consumer Communications & Networking Conference (CCNC) | 2017 |
| **A combination of Internet of Things (IoT) and a graph database for future battlefield systems** | 2017 International Conference on Computing, Communication and Automation (ICCCA) | 2017 |
| **Sparse proximity-based robust fingerprint recognition** | 2017 International Conference on Computing, Communication and Automation (ICCCA) | 2017 |
| **Semantic edge computing and IoT architecture for military health services in the battlefield** | Proceedings of the 14th Annual IEEE Consumer Communications & Networking Conference 2017 | 2017 |
| **Improving Height Estimation of Primary Surveillance Radars using Secondary Surveillance Radar** | International Radar Symposium India 2017 | 2017 |
| **Convolutional neural networks for crowd behavior analysis: a survey** | The Visual Computer | 2018 |
| **Cyber-physical surveillance system for the Internet of Vehicles** | 2018 IEEE 4th World Forum on Internet of Things (WF-IoT) | 2018 |
| **Future Battlefield Air Space Management: An Internet of Things (IoT) Based Framework** | International Conference on Signal Processing and Communication 2019 | 2019 |
| **Detecting Arson and Stone Pelting in Extreme Violence: A Deep Learning-Based Identification Approach** | Intelligent Human-Computer Interaction, Korea | 2021 |

**Journal Publication**

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| --- | --- | --- | --- |
| **S.No.** | **Title of Paper** | **Name of the Journal** | **Indexing status of the journal with indexing agency** |
| **1.** | **Convolutional neural networks for crowd behavior analysis: a survey** | **The Visual Computer**  **Impact Factor: 2.601** | **SCIE**  **Web of science**  **Clarivate analytics** |
| **2.** | **Violence recognition using convolutional neural network: A survey** | **Journal of Intelligent & Fuzzy Systems**  Impact Factor: **1.851** | **SCIE**  **Web of science**  **Clarivate analytics** |
| **3.** | **Applied Convolutional Neural Network Framework for Tagging Healthcare Systems in Crowd Protest Environment** | **Mathematical Biosciences and Engineering**  Impact Factor: **2.080** | **SCIE**  **Web of science**  **Clarivate analytics** |

# **Education**

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| **Course/Degree** | **Institution/ University** | **Scores** | **Year of passing** |
| **PhD (Electronics & Communication)** | **Delhi Technological University, Delhi** | **Submitted** | **2016-2022** |
| MTech (Information Technology) | Indian Institute of Information Technology, Allahabad | 8.5 (CGPA) | 2005-2007 |
| B.E. (Computer Science & Eng.) | VBS Purvanchal University, Jaunpur | 76.7 % | 1998-2002 |
| Intermediate | Bishop Johnson School, Allahabad, (I.C.S.E) | 87.0 % | 1998 |
| High School | Bishop Johnson School, Allahabad, (I.C.S.E) | 80.6 % | 1996 |

**Personal Information**

**Date of Birth:** Sep24,1980

**Sex:** Male

**Marital Status:** Married

**Nationality:** Indian