

AMISH KUMAR

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researchgate.net/profile/Amish_Kumar4 https://scholar.google.com/citations?user=9vDZTPAAAAAJ



PROFESSIONAL SUMMARY:

As an experienced AI developer and firmware engineer with a strong passion for creating innovative solutions, I have specialized in AI models, firmware architectures, and optimizing performance for various applications. Over the past 7 years, my focus has been on AI algorithm development, particularly in Image processing and Computer Vision. In addition, I have 2 years of experience in firmware development.

I am currently seeking new opportunities where I can apply my expertise and continue making significant contributions to cutting-edge projects. My enthusiasm for technology, combined with a keen problem-solving ability, motivates me to constantly push the boundaries of AI and firmware development. I am eager to take on a respected and challenging role within an organization that fosters my professional growth while allowing me to be resourceful and adaptable, ultimately contributing to the organization's overall productivity.

EXPERIENCE

Embedded Engineer

Zreyas Technology Pvt. Ltd

Apr 2022 – Present

Kolkata, India

Project Linked Person as AI Algorithm Developer

Computer Vision and Pattern Recognition (CVPR) Unit

Sep 2021 – Mar 2022

ISI, Kolkata, India

EDUCATION

Ph.D. in Computer Science and Engineering

National Institute of Technology Durgapur, India

Aug 2015 – August 2021

Information Retrieval from Biomedical Images for Early Detection of Neuro Diseases

M.Tech. in Information Technology

National Institute of technology Durgapur, India

Aug 2013 – June 2015

CGPA: 8.89

B.Tech. in Electronics and Telecommunication Engineering

C. V. Raman College of Engineering, Bhubaneswar, India

Sept 2009 – June 2013

CGPA: 8.06

SKILLS

Primary:

Machine Learning Deep Learning CNN
Digital Image Processing Bio-Medical Imaging
Electrical and Electronics

Embedded Device and Sensors:

Arduino ESP32 ESP8266 Nvidia Jetson
Raspberry Pi Camera Module WiFi Module
Sensor module

Programming Skill:

C C++ Python keras Tensorflow
PyTorch Pyqt5 Sklearn Numpy
Matlab Latex Deepstream Tensorrt
OpenCV (C++ & Python)

Documentation:

Microsoft Office Microsoft PowerPoint
Microsoft Excel Latex

LANGUAGE

English ●●●
Hindi ●●●
Bengali ●●●

ACHIEVEMENTS

Financial Assistantship for M.Tech From MHRD, Govt of India.
2013-2015

Financial Assistantship for Ph.D. From MHRD, Govt of India.
2015-2020

Qualified Gate-2018
Rank: 4600

PROJECTS

Zreyas Technology Pvt Ltd.

During my journey, I had the opportunity to work on several diverse and challenging projects, showcasing my expertise in AI development, firmware engineering, and project management:

- **Object Detection and Tracking for Surveillance System:** I led the development of an object detection and tracking system tailored for surveillance applications. Utilizing deep learning models for object detection and segmentation, we implemented sophisticated algorithms to track objects across video frames in real-time. Additionally, we integrated remote visualization capabilities to enhance monitoring efficiency.
- **Data Collection from mmWave Radar AWR2944:** I developed a Python API to collect data from an mmWave radar via the UART port. This allowed us to efficiently gather and analyze data from the radar sensor. Moreover, I designed a graphical user interface (GUI) using PyQt5 for data visualization and storage, enabling seamless data analysis.
- **Automatic Bottle Filling System:** I took charge of the complete project, handling planning, cost estimation, and feature identification. Additionally, I developed the firmware responsible for automating the bottle filling process, optimizing efficiency and accuracy.
- **Toy Car Emulation with Carla Simulator:** In collaboration with the team, we configured Carla simulators and developed a Python API to transmit vehicle information from Carla to a toy car control board through UART port and over WiFi. We extensively modified the toy car, including wheel and steering control, and updated the firmware to accommodate speed ratio and steering wheel adjustments, providing a realistic car emulation experience.
- **Project Proposal Writing:** Apart from my technical contributions, I actively participated in writing multiple project proposals on behalf of my company, Zreyas Technology. Crafting well-structured and persuasive proposals played a crucial role in securing new projects and partnerships.

These projects demonstrate my versatility as an AI developer and firmware engineer, as well as my ability to lead and contribute to various aspects of a project's lifecycle. I am excited to continue exploring new opportunities and contributing to cutting-edge projects that leverage my skills and passion for innovation.

Indian Statistical Institute, Kolkata (PLP)

In ISI Kolkata, I have had the opportunity to work on an Automatic License Plate Recognition (ALPR) system. This experience allowed me to gain in-depth knowledge of ALPR technology, and I am proud to have made significant contributions to this field. As a result of my work, I have published two research papers on ALPR, contributing to the existing knowledge base in this area.

Moreover, I successfully deployed our ALPR algorithm on both an Ubuntu-based server and Jetson Nano, showcasing my ability to adapt the technology to different platforms and environments. This deployment allowed us to achieve real-world applications and demonstrate the practicality of our solution.

National Institute of Technology Durgapur (PhD)

- Designed a CAD Based GUI tool for Stroke lesion detection and visualization, based on my published research paper.
- Home automation using Esp8266(with the unique combination of online and offline mode in real-time)
- Face Recognition system design and deployment(*each system can handle multiple streams with no interruption, each and every parameter can be configured by .ini file, and in the next reboot system will consider those parameters based on the state of art algorithm*).

National Institute of Technology Durgapur (M.Tech)

- **Multi image super-resolution via sparse using adaptive weight vector estimation** (National Institute of Technology, Durgapur), Which was published in IET journal.

C.V.Raman College of Engineering

- **Moving Object Detection in Dynamic Scene** (C.V.Raman College of Engineering).

PUBLICATIONS

Journal Articles

- **Kumar, A.,** Upadhyay, N., Ghosal, P., Chowdhury, T., Das, D., Mukherjee, A. and Nandi, D., 2020. CSNet: A New DeepNet Framework for Ischemic Stroke Lesion Segmentation. *Computer Methods and Programs in Biomedicine*, p.105524.
- **Kumar, A.,** Ghosal, P., Kundu, S.S., Mukherjee, A. and Nandi, D., 2022. A lightweight asymmetric U-Net framework for acute ischemic stroke lesion segmentation in CT and CTP images. *Computer Methods and Programs in Biomedicine*, 226, p.107157.
- Ghosal, P., Roy, A., **Kumar, A.,** Kundu, S.S. and Nandi, D., An Attention Induced Compound Cnn Architecture for Efficient Segmentation of Multiple Sclerosis Lesions.*Expert System with Application* Available at SSRN 4530464.

- Ghosh, D., **Kumar, A.**, Ghosal, P., Mukherjee, A. and Nandi, D., 2020. Filtering Super-Resolution Scan Conversion of Medical Ultrasound Frames. *Wireless Personal Communications*, pp.1-23.
- Ghosal, P., Chowdhury, T., **Kumar, A.**, Bhadra, A.K., Chakraborty, J. and Nandi, D., 2021. MhURI: A Supervised Segmentation Approach to Leverage Salient Brain Tissues in Magnetic Resonance Images. *Computer Methods and Programs in Biomedicine*, 200, p.105841.
- Nandi, D., Karmakar, J., **Kumar, A.** and Mandal, M.K., 2019. Sparse representation based multi-frame image super-resolution reconstruction using adaptive weighted features. *IET Image Processing*, 13(4), pp. 663-672.

Conferences

- **Kumar, A.**, Shivakumara, P., Chowdhury, P.N., Pal, U. and Liu, C.L., 2022, August. DPAM: A New Deep Parallel Attention Model for Multiple License Plate Number Recognition. In *2022 26th International Conference on Pattern Recognition (ICPR)* (pp. 1485-1491). IEEE.
- **Kumar, A.**, Shivakumara, P. and Pal, U., 2022, June. RDMMLND: A New Robust Deep Model for Multiple License Plate Number Detection in Video. In *International Conference on Pattern Recognition and Artificial Intelligence* (pp. 489-501). Cham: Springer International Publishing.
- Ghosal, P., **Kumar, A.**, Kundu, S. S., Srivastava U. P., Datta, A. and Sharma, H. K. D., AUTCD-Net: An Automated Framework for Efficient Covid-19 Diagnosis on Computed Tomography Scans. In *ICICT-2021*. (Accepted)
- Borah, N., Varma, P.S.P., Datta, A., **Kumar, A.**, Baruah, U. and Ghosal, P., 2022, December. Performance Analysis of Breast Cancer Classification from Mammogram Images Using Vision Transformer. In *2022 IEEE Calcutta Conference (CALCON)* (pp. 238-243). IEEE.
- Ghosal, P., **Kumar, A.**, Kundu, S.S., Srivastava, U.P., Datta, A. and Deva Sarma, H.K., 2022. AUTCD-Net: An Automated Framework for Efficient Covid-19 Diagnosis on Computed Tomography Scans. In *Machine Learning in Information and Communication Technology: Proceedings of ICICT 2021, SMIT* (pp. 109-116). Singapore: Springer Nature Singapore.
- **Kumar, A.**, Murthy, O.N., Ghosal, P., Mukherjee, A. and Nandi, D., 2019, October. "A Dense U-Net Architecture for Multiple Sclerosis Lesion Segmentation". In *TENCON 2019-2019 IEEE Region 10 Conference (TENCON)* (pp. 662-667). IEEE.
- **Kumar, A.**, Debnath, A., Tejaswini, T., Gupta, S., Chakraborty, B. and Nandi, D., 2019, November. "Automatic Detection of Ischemic Stroke Lesion from Multimodal MR Image". In *2019 Fifth International Conference on Image Information Processing (ICIIP)* (pp. 68-73). IEEE.
- Ghosh, D., **Kumar, A.**, Ghosal, P., Chowdhury, T., Sadhu, A. and Nandi, D., 2020, February. Breast Lesion Segmentation in Ultrasound Images Using Deep Convolutional Neural Networks. In *2020 IEEE Calcutta Conference (CALCON)* (pp. 318-322). IEEE.
- Ghosh, D., **Kumar, A.**, Ghosal, P. and Nandi, D., 2019. "Speckle Reduction of Ultrasound Image via Morphological Based Edge Preserving Weighted Mean Filter". In *Advances in Communication, Devices and Networking* (pp. 307-316). Springer, Singapore.
- Karmakar, J., **Kumar, A.**, Nandi, D. and Mandal, M.K., 2018, November. A Novel Super-Resolution Reconstruction from Multiple Frames via Sparse Representation. In *International Conference on Nanoelectronics, Circuits and Communication Systems* (pp. 33-45). Springer, Singapore.
- Ghosh, D., Nandi, D., Ghosal, P. and **Kumar, A.**, 2018. "A Novel Speckle Reducing Scan Conversion in Ultrasound Imaging System". In *Progress in Intelligent Computing Techniques: Theory, Practice, and Applications* (pp. 335-345). Springer, Singapore.
- Maiti, S., **Kumar, A.**, and Nandi, D., 2015. "Sparse Denoising in Speckle Noise: A Comparative Study of Dictionaries". In *Intelligent Computing and Applications* (pp. 79-87). Springer, New Delhi.