# Jitender MAURYA

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Dynamic and results-driven Deep Learning and Machine Learning expert with 9.5 years of experience in designing and implementing cutting-edge computer vision and LLM Solutions. Adept at leading research projects, publishing in top-tier conferences, and securing patents. Proven track record in driving innovation and contributing to the advancement of the field. Adept at collaborating with cross-functional teams to integrate solutions into real-world applications. I am passionate about pushing the boundaries of AI and applying innovative solutions to real-world problems.

## Education

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| | **M.Tech in Visual Information Processing and Embedded system** | |
| 2013–2025 | Indian Institute of Technology, Kharagpur | |
| | Focus: Image Processing, Computer Vision and Machine Learning | CGPA 8.65 |
| 2009–2013 | **B.Tech in Electronics and Communication Engineering** | |
| | Guru Jambheshwar University of Science & Technology, Hisar | CGPA 7.18 |

## Work Experience

**Toshiba Software India Pvt. Ltd**
- Research Analyst          april 2023 - present
- Senior Research Engineer          dec 2020 - march 2023

**TCS Research & Innovation Labs**
- Developer          july 2015 - march 2016
- Researcher          april 2016 - dec 2020

## Skills and Expertise

Transformers, openai, anthropic, RAG, Python, C++, PyTorch, Scikit-learn, OpenCV, HuggingFace, Pandas, Mongodb, Streamlit, Matplotlib, Seaborn Object Detection, Image Classification, Segmentation, Image Processing, LLM, Text Classification, Git Version Control, Phidata, Docker

## Projects

- **Build a Retrieval-Augmented Generation (RAG) System for Company Policy Question Answering** a chat based system to query office policy in quick time.
  Technologies Used: Python, Hugging Face Transformers, FAISS, PyTorch, cohere
- **Robust Image Classification in Presence of Highly Imbalanced and Noisy Annotations for Wafer Defect Detection** Annotated data is often costly, labor-intensive, and challenging to obtain, especially when dealing with imbalanced and noisy labels, a critical issue in the field of AI. Addressed this challenge by developing a robust image classifier capable of performing effectively even with highly imbalanced and noisy annotations. This approach significantly reduces dependency on expert annotations, lowering the cost and enabling the development of reliable models from less curated datasets.
  Achievement : 26% improvement on WM811K  10% improvement on TissueMNIST dataset
- **Model Compression (Structured)** Developed a structured pruning technique to optimize deep learning models for deployment on typical GPUs. The approach **achieved a 45% compression** for both image classification and object detection models while maintaining comparable accuracy to the original unpruned models. This work significantly enhances the efficiency and deployability of deep learning models on resource-constrained hardware without compromising performance.
- **Domain Adaptation on Object Detection (Published in WACV 2023)** Developed a novel end-to-end domain adaptation technique for object detection, combining feature distribution alignment and self-training to achieve effective adaptation. The method introduces reliable pseudo-label generation through feature alignment and data distillation, paired with interpolation-based consistency regularization (mixup) during self-training.
- **Real Time Hand Segmentation on Frugal HMD for gestural interface** HMD devices can be used in tele-assistance from remote sites when on-field operators require off-field expert's guidance for trouble-shooting. For an effective communication, hand gestural interaction method is employed to localize the ROI in First Person View. The region selected using free hand sketching gestures is highlighted to the remote server setup for expert's advice.

- **Natural Zoom Gesture based Interaction on Frugal Devices** Developed a Natural Zoom Gesture-based interaction system for Google Cardboard and HMD devices, tailored for inspection tasks in oil rigs and other challenging environments. Traditional data entry methods requiring hand usage often hinder efficiency during inspections. This solution enables hands-free interaction, allowing inspectors to focus on critical tasks while improving productivity and operational ease. The gesture-based approach enhances usability and facilitates more effective and precise inspections in demanding conditions.
- **Hand Gesture Based Region Marking for Tele-support using Wearables** Developed Gesture based Region marking on android, Google Cardboard (Published in CVPR 2017)

## Publications

- **Jitender Maurya**, Krishna kakkirala, "**Effective Image Classification Amidst Noisy Labels and Imbalanced Datasets**", Submitted In ICCV 2025
- **Jitender Maurya**, Keyur R. Ranipa, Osamu Yamaguchi, Tomoyuki Shibata, and Daisuke Kobayashi, "**Domain Adaptation Using Self-Training With Mixup for One-Stage Object Detection**", In WACV 2023, Hawaii, USA
- Srinidhi Hegde, **Jitender Maurya**, Aniruddha Kalkar, and Ramya Hebbalaguppe, "**SmartOverlays: A Visual Saliency Driven Label Placement for Intelligent Human-Computer Interfaces**",In WACV 2020 Snowmass Village, CO, USA
- **Jitender Maurya**, Ramya Hebbalaguppe, and Puneet Gupta, "**Real Time Hand Segmentation on Frugal headmounted device for gestural interface**" In ICIP 2018 Athens, Greece
- Archie Gupta, Shreyash Mohatta, **Jitender Maurya**, Ramakrishna Perla, Ramya Hebbalaguppe, and Ehtesham Hassan, "**Hand Gesture Based Region Marking for Tele-presence using Wearables**" In CVPR 2017, Honolulu, Hawaii, USA
- Arindam Saha, **Jitender Maurya**, Sushovan Mukherjee, and Ranjan Dasgupta, "**ThermaFlowScan: Automatic Thermal Flow Analysis of Machines from Infrared Video**" In VISAPP 2017, Porto, Portugal

## Patents

- "Robust Image Classification in Presence of Noisy Annotations and class imbalance"[2025]
- "Learning apparatus, learning method, object detection apparatus, object detection method, learning support system and learning support method"
  US Patent number US20230132770A1 [2023]
- "System and Methods for performing Hand Segmentation",
  US Patent number 11069067. [2021]
- "Hand detection in first person view" US Patent number 11126835 [2021]
- "Multi-label placement for augmented and virtual reality and video annotations", WO Patent WO2020174447A1. [2020]
- "Telepresence Framework for Region of Interest Marking using Headmounted Devices",
  US Patent number 10831360. [2020]