Swastik Mahapatra [in]

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SKILLS 🖥

- **Frameworks**: Tensorflow, Pytorch, CUDA, OpenCV, ROS **Languages**: C/C++, Python, Java, Assembly
- **Technologies**: Deep-Learning, Computer-Vision, Edge AI **Hardware**: Nvidia Jetson, Arm V7-V8m, AI-MCU, DSP

WORK EXPERIENCE 👤

- ### Analog Devices
  Senior Engineer, AI/ML Software Engineering

  Bangalore, India
  Aug 2018 - Aug 2024

  - **Human Robot Interaction(HRI)**: Designed and developed a fast hand gesture recognition algorithm, that helped control robotic manipulator arms, using the **ADTF3175** ☑ Time-Of-Flight sensor. The Deep-Learning inference with **Tensorflow-Lite** was optimized to run in real-time within the sensor's compute module.
  - **Industrial Robotics and AI**: Collaborated with the **ADI Industrial Robotics** and **A.D.A.M.** ☑ team to develop operational safety projects for robotics applications using ADI's revolutionary time-of-flight sensor **ADTF3175**.Projects include applications like 3D image stitching, Safety Bubble Detector , floor estimation, etc. All of the projects were also optimized with **CUDA programming**, to take advantage of GPU acceleration.
  - **Embedded AI**: Led a team to develop inference framework and interface for ADI's most power-efficient AI Microcontroller with Convolutional Network **AI Accelerator**, the **MAX78002** ☑
  - **Deep Learning on Edge for ADI People Counter DL**: Worked on the development of ADI's flagship building automation project, the **EagleEye People Counter Algorithm** ☑.Upgraded the algorithm to use Deep-Learning vision models for better accuracy. And developed a fixed point DL model inference framework for highly compute-constrained edge processors like ADI's Blackfin series of DSPs. (**Awarded Patent** ☑)
  - **Multi-sensor Aggregation Platform and other DL Projects**: Created a cloud platform to aggregate the object detection results generated by multiple camera modules in real time. This helped greatly increase the coverage area for Human detection and tracking applications while retaining excellent accuracy. I further worked on projects involving Object tracking, facial recognition/detection-based sound beaming, image segmentation, etc.

EDUCATION 📕

- **Carnegie Mellon University**
  Master of Science in Robotic Systems Development (MRSD)
  Selected Coursework: Advanced Computer Vision, Deep Reinforcement Learning & Control

  Pittsburgh, PA
  Aug. 2024 - Apr. 2026

- **Indian Institute Of Science**
  Summer Fellow - Department Of Computer Science And Automation ☑

  Bangalore, India
  Jun. 2018 - Aug. 2018

  - **Project Finalist**: My Undergraduate Project was elected to be among the top 4 best projects from all over India and was featured in IISc's Official Channel ☑.

- **Visvesvaraya Technological University**
  Bachelor of Engineering in Computer Science And Engineering; GPA: 3.42/4.0

  Bangalore, India
  Aug. 2014 - Jul. 2018

PATENTS AND PUBLICATIONS 📄

- **Patent**: **US20220198257A1** - ARCHITECTURE FOR RUNNING CONVOLUTIONAL NETWORKS ON MEMORY AND MIPS CONSTRAINED EMBEDDED DEVICES ☑
- **Publications**: 14+ Publications in the fields of Deep-Learning, Edge AI, Computer Vision and Robotics ☑.

AWARDS AND ACHIEVEMENTS 🏆

- Awarded the prestigious Analog Devices India **Ten Young Professionals Under Ten Award** ☑ as a recognition for being among the top ten contributors to the organization with under 10 years of Experience.
- Won the **Best Paper Award** ☑ at ADI **India Technical Conference 2022.**
- Awarded multiple **ADI Spot Awards** and **ADI Impact Awards** for Excellent Professional Performance ☑.

PROJECTS 🎧

- **Relevant Projects**:
  1) 3D Gesture Control for Human Robot Interaction [☑]   **2)**Depth image stitching for Multi-sensor ToF Systems [☑]
  3)Safety Bubble Detector for Industrial Robotics [☑]   **4)**Floor detection for mobile robots using RANSAC [☑]