Mahesh Sudhakar

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Experience

- **AI Engineer** — Waterloo, Canada
  Musashi AI North America — *Jan. 2021 - Present*
  - Owning the real-time instance segmentation pipeline that's deployed on NVIDIA Jetson AGX Xavier (edge).
  - Automated the cumbersome data annotation process by employing the Detectron2 object detection package.
  - Striving towards automating the current manual inspection task by building a lightweight defect segmentation model that can reject defective auto parts manufactured by inferring real-time on FANUC robot manipulators.
- **Research Associate** — Toronto, Canada
  University of Toronto — *May 2020 - Feb. 2021*
  - Collaborated with LG AI Research (Korea) as a Post-Graduate researcher for a year-long project to decode deep residual Machine Learning classification and detection models.
  - Published and presented 3 Academic Research Papers on top-tier AI conferences - AAAI21 and IEEE ICASSP21.
  - Proposed and developed a novel architecture of eXplainable AI (XAI) algorithm that was integrated along with LG's existing industrial code stack for fully automated supervision.
- **Systems Engineer** — Bangalore, India
  Infosys Limited — *May 2016 - July 2018*
  - Developed and delivered multiple MySQL Stored Procedures in the relational DB management system server, for a data-driven loyalty analytics client, as their Back-End software developer.
  - Managed several diverse sensitive banking data regarding retail and logistics and contributed towards automating (RPA) numerous periodic IT processes.
  - Addressed many client-specific functional requirements and have quickly resolved various critical real-time issues amidst minimal supervision.

Education

- **University of Toronto** — Toronto, Canada
  Master of Engineering in Electrical & Computer Engineering (ECE); GPA: 3.97/4.00 — *Sept. 2018 - Apr. 2020*
- **Anna University** — Chennai, India
  Bachelor of Engineering in Electrical & Electronics Engineering (EEE); cGPA: 8.54/10.00 — *Aug. 2012 - Apr. 2016*

Projects

- **Autonomous Systems Simulation, aUToronto** — *Jan. 2020 - June 2020*

  Designed and built various simulated scenarios for the ego vehicle to drive through to test the pedestrian detection and tracking algorithm of Zeus (UofT's self-driving car) by exporting the corresponding sensor data to the ROS framework.

- **Explainable AI Algorithms for Visual Defect Inspection** — *Sept. 2019 - Apr. 2020*

  Developed and studied XAI algorithms that highlight the regions of the image corresponding to the model's predictive accuracy. Identified potential approaches to build an efficient unbiased model for industrial defect inspection use cases.

- **3D Object Detection and Tracking** — *Sept. 2019 - Dec. 2019*

  Implemented a human detection and tracking algorithm on a semi-humanoid robot - Pepper, using the 3D vision data collected from its RGB and Depth sensors within a confined setup, to enable better assistance for the old.

- **Breast Cancer Classification** — *Jan. 2019 - Apr. 2019*

  Trained a Convolutional Neural Network with relatively higher accuracy on a binary classification task to identify Invasive Ductal Carcinoma - the most common type of all breast cancers, on patches of H&E stained histopathology images using modern digital image processing algorithms and diverse hyper-parameter tuning.

Programming Skills

- **Languages**: Python, Julia, C++, SQL, HTML
- **Softwares & Tools**: PyTorch, TensorFlow, Keras, scikit-learn, OpenCV, MATLAB, Numpy, Git, ROS, Docker, Conda