

Nrupatunga

[in LinkedIn](#) | [9972716433](tel:9972716433) | nthere.dev | nrupatunga.tunga@gmail.com | [GitHub](#)

Skills

- Python | C++ | C | Matlab
- Caffe | MXNet | PyTorch | Tensorflow | TFLite | PyTorch-Lightning
- Vim | Git | TMUX | MSVC | QT | Eclipse | Android JNI/NDK

Experience

Staff Research Engineer **Byju's OSMO** *Bangalore* **09/2019 - Current**

- Localization module to detect game tangibles: YOLOv5 object detection model trained with synthetic and minimal real data. Adoption of improved CloU loss and modified NMS
- Built a continuous orientation estimation model using a multi-classifier approach with mean-shift smoothing
- Developed a mobile-friendly single-shot oriented bounding box detection module to regress center and orientation attributes
- Quantify the potential of synthetic dataset-only training for localization task to reduce the development time for designers and engineers
- Built SSD/CenterNet based single-shot hand and fingertip detectors for content retrieval using phygital interaction. Adoption of asymmetrical focal loss to improve the detections
- Developed algorithm to extract the table attributes to facilitate the key information extraction in report cards
- Developed a preprocessing algorithm to eliminate data variabilities in kids' handwriting and enhance input quality
- Built classification model to identify the kids' interaction while writing. Frame-to-frame optimization to improve the OCR performance and user experience
- Developed a calibrated character recognition model using focal loss and knowledge distillation
- Developed a tool to create ambiguous digits data using Joint-VAE for model calibration and comparing models' performance ([demo](#))
- Keypoint based visual elements detection for auto-grading worksheets

Deep Learning Research Engineer **Whodat** *Bangalore* **04/2017 - 08/2019**

- Live face verification with the selfie and KYC document: Built ResNet based models to improve the vector representation for faces combining inter and intra marginal loss functions
- Monocular depth, segmentation, and normal map estimation to estimate planes and their orientation and centroids to assist the placement of virtual objects in the real-world

Technical Lead **Samsung R&D** *Bangalore* **07/2012 - 03/2017**

- Implemented SqueezeNet based food recognition model for Indian food categories
- Built a segmentation model for sky map segmentation for horizon detection
- Nearest neighbor image retrieval using GIST descriptor for detecting duplicate images
- Developed algorithm for detection of low-light, poorly lit faces for one-touch auto image enhancement solution on Galaxy S6
- Bilinear resizer module for less memory architecture in the photo editor. Red-eye correction, Blur detection algorithm
- Owned the design and development of JNI framework for Touch-Focus USP commercialized on Galaxy S5

Mentorship

- Mentored vision engineers in algorithm development and metrics definition keeping business requirements and constraints in mind

Education

Masters in Signal Processing **Indian Institute of Science** *Bangalore* **2010 - 2012**

Bachelor of Engineering in Electronics and Communication **Sri Jayachamarajendra College of Engineering** *Mysore* **2005 - 2009**

Projects

- **Single Object Tracking:** Implementation to facilitate easy training and experimentation ([code](#))
- **Fast Image Filters with CNN:** Implementation of few image filters using CNN ([code](#))
- **Color Pencil Sketch Effect:** Combining sketch and tone for human style pencil drawing ([code](#))
- **Image Processing Toolbox:** Developed QT based GUI application to test basic blur, edge detection algorithms ([code](#))

Papers

- **Nrupatunga, Aashish Kumar, Anoop Rajagopal;** *Phygital Math Learning with Handwriting for Kids. NeurIPS 2021 Workshop on Math AI for Education* ([link](#))

Others

- Recognition for the effort in the success of Touch Focus USP commercialized in Galaxy S5