Bhushan Gawde

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EDUCATION

Technical University of Munich	**April 2021 - Present**
Master of Science in Informatics	Munich, Germany

Veermata Jijabai Technological Institute (VJTI)	**July 2014 - May 2018**
Bachelor of Technology in Computer Engineering. **CGPA: 9.44/10 (4th rank)**	Mumbai, India

PROFESSIONAL EXPERIENCE

Samsung R&D India, Bangalore – *Senior Software Engineer– AI Computational Imaging*   **June 2018 – April 2021**

- Involved in design and development of Human portrait-based artistic effects under the **Selfie Camera** '**Portrait**' mode in Samsung's **flagship** Galaxy smartphone models like Galaxy **S20**, Galaxy **Note 20**, Galaxy **S21**, etc.
- Worked on deep learning-based human **instance** and **semantic** segmentation networks.
- Worked on the development of Android native libraries in C++.
- Developed 'Temporal Smoothing' and 'Depth-based Bokeh Rendering' native modules in C++ which were integrated into the Bokeh solution pipeline of Portrait mode. Focused on core functionality implementation and optimizations.
- Worked on '**Starburst**' effect that has been commercialized in the Intelligent Camera Mode of Galaxy **S10**, **S10e** and **S10+**. Restructured the entire code flow using **ARM Neon** intrinsics to achieve real-time KPI.
- Contributed to a **patent** idea titled 'System and Method for enhanced video segmentation using Dynamic ROI estimation'. Provisional Patent Application number: 202141001449.

Samsung Electronics, South Korea – *Business Trip*   **Sept 2019 – Nov 2019**

- Travelled to **Samsung HQ** at **South Korea** for 2.5 months for carrying out the commercialization activities related to Portrait Mode on Samsung's flagship and innovative smartphone series. (S series, A series, M series, etc.).
- Achieved significant knowledge of the end-to-end system design of Camera Application and Framework.
- Received '**Samsung Citizen Award**' for my efficient co-work with HQ counterparts.

Samsung R&D India, Bangalore – *Student Trainee (Intern) – Vision Research*   **May 2017 - July 2017**

- Research on various real-time object detection networks.
- Trained '**YOLOv2'** on **KITTI** dataset for real-time pedestrian detection.
- Identified bottlenecks to improve mAP.

PUBLICATIONS

- B. Gawde, "A fast, automatic risk detector for COVID-19", *IEEE Pune International Conference, IEEE, March 2021*. [pdf]
- B. Gawde*, B. Makwana, et al., "Opsum: Topic-based opinion summarization and sentiment analysis", *International Journal of Engineering Research and Applications*, *Vol. 8, Issue 9, September 2018.* [pdf]

SOFTWARE SKILLS

- **Programming languages**: C, C++, Python. Also, familiar with Java, OpenCL and ARM Neon intrinsics.
- **Machine Learning and Data Analytics**: PyTorch, Scikit-Learn, NumPy, Pandas, Matplotlib.
- **Application Software**: Microsoft Visual Studio, Android Studio, Eclipse.
- **Web Development:** HTML, CSS, JavaScript, PHP.
- **Database:** Microsoft SQL Server, MySQL.
- **Version Control tools:** Git, Perforce

SELECTED PROJECTS

A fast, automatic risk detector for COVID-19 | Pytorch, Python   **Mar 2020 - June 2020**

- A deep learning-based framework that incorporates detection of faces with/without face mask in images, age prediction of people in case of absence of mask, and calculation of social distance between people in case of multiple detections.
- Comparison of Faster RCNN, YOLOv2 and YOLOv3 for object detection.
- 'Real-World Masked Face dataset' was used.

Topic based opinion summarization and sentiment analysis | TensorFlow, Python   **Sept 2017 - April 2018**

- Trained an **LSTM** network for sentiment analysis of phone reviews from amazon.com.
- Created a summary of product features using extractive summarization approach.

Automatic Image Captioner | Keras, Python   **Jan 2018 - April 2018**

- A deep learning model for automatic generation of captions that describe images.
- **ResNet-101** model used as the feature extractor. RNN made up of **LSTM** units for processing the caption sequence.
- Decoder consisted of an Add layer and a final Dense layer for making the final predictions. 'Flickr8K' dataset was used.

Emotion-aware music player | Python, OpenCV   **Dec 2017 - Feb 2018**

- Haar cascade detector was used for face detection and LBPH algorithm was used for recognizing facial emotions (angry, sad and happy). Based on the classified emotion, appropriate song was selected to be played.
- 'Cohn-Kanade' dataset was used for training and testing.