Naveen Kumar Bangalore Ramaiah

Address: 4301 Grand Ave Pkwy, Austin, TX-78728   **Phone: +**1(408)-310-2850   **E-mail:**nbangalore2@gmail.com

Over 7 years of experience in Research & Development, specializing in advanced sensing solutions for video conferencing, AD/ADAS, and Connected Vehicles. Adept at developing and implementing vision-based algorithms for real-time automotive & video conferencing applications, with a focus on multi-camera systems, camera calibrations, stereo matching, 3D object detection, and recognition algorithms. Proven track record in generating patent ideas and publishing research findings at conferences and industry associations.

Work Experience

Software Applications Engineer 4   HP Inc, Austin, TX   11/2022 – Present

- Developed a proof-of-concept - multi-camera video conferencing system for future hybrid work conference room and successfully filed a patent based on the technology.
- Currently, developing a state-of-the-art image stitching algorithm using multi-camera systems, which will be used in future video conferencing systems.
- Currently, leading the development of multi-camera calibration initiatives necessary for the camera production facility to support our upcoming multi-camera-based video conferencing products.

Senior Embedded Engineer   Poly, Austin, TX   04/2022 – 11/2022

- Designed and implemented scripts to calibrate multiple cameras and produce depth maps, enhancing the accuracy of people tracking and framing.
- Developed an efficient algorithm for automatic camera misalignment correction and successfully delivered it for production use.

Researcher, ADAS   Hitachi America, Ltd, Farmington Hills, MI   08/2015 – 04/2022

- Developed stereo camera-based pothole, road debris detection algorithms and implemented them in Hitachi's stereo camera as a part of the road preview application for connected vehicles to improve the ride quality.
- Developed Kalman based sensor fusion algorithm to fuse mono-camera and Radar detection and evaluated its recognition performance against stereo camera.
- Developed camera-based in-cabin Driver Monitoring Solution using GRU and LSTM to detect driver distraction and drowsiness suitable for connected vehicles applications.
- Led a research project of 2 interns to develop and implement Thermal (FIR) camera-based lane markers and road curb detection system in real-time for automotive applications.
- Led a research project of 2 interns to evaluate the different image compression methods suitable for AD applications considering various factors such as, image compression rates, camera resolution, DNN for obstacle detection, and processing time.
- Supported team in deploying developed pothole and road debris in Hitachi's connected mobility platform and evaluated the performance.
- Supported team in developing camera acquisition software and CNN development for Surface Defect Inspection System
- Generated 2 patents (as 1st inventor), 4+ patents (as 2nd & 3rd inventor) and published 3+ journals.
- Participated and demonstrated developed ADAS applications to OEMs in Tech-shows such as CES and SAE.

Software Engineer   KPIT Technology (present – Birlasoft Ltd), Pune, India   08/2010 – 05/2013

- Developed object detection and feature extraction algorithm in C/C++ to detect pedestrians using FIR camera.
- Supported chief and senior researchers in preparing testing strategies as well as client documentation for developed algorithms.
- Developed scripts to automate testing tools using MATLAB and C++

Skills

- **Languages**: C/C++, MATLAB, and Python
- **Libraries**: OpenCV
- **Operating Systems:** Linux, Windows, ROS
- **Tools**: Visual Studios, Qt, PyCharm
- **Knowledge base**: Image processing, 3D Object detection, recognition, tracking, stereo matching, computer vision and sensor fusion.

Journal publications

- **Bangalore Ramaiah, N.K**. and Kundu, S., "Stereo Vision Based Pothole Detection System for Improved Ride Quality," *SAE Int. J. Advances & Curr. Prac. in Mobility* 3(5):2603-2610, 2021, – DOI:10.4271/2021-01-0085.
- **Bangalore Ramaiah, N.K** and Kundu, S., "Stereo Vision-Based Road Debris Detection System for Advanced Driver Assistance Systems," *SAE Int. J. Trans. Safety* 10(1):2022, DOI:10.4271/09-10-01-0003.
- Zhu, X and Kundu, S and **Ramaiah, N.,** "Automatic Surface Defect Inspection System Using Convolutional Neural Networks," *IOP Conference Series: Materials Science and Engineering* - 2020. DOI:10.1088/1757-899X/999/1/012012

Patents

- Detecting debris in a vehicle path - US20210303875A1 - **Naveen Kumar BANGALORE RAMAIAH** and Subrata Kumar KUNDU
- Detection of foreign objects in a vehicle pathway - DE112021000482T5 - **Naveen Kumar BANGALORE RAMAIAH** and Subrata Kumar KUNDU
- Data driven dynamically reconfigured disparity map - US20220350995A1 - **Naveen Kumar BANGALORE RAMAIAH** and Subrata Kumar KUNDU
- Pothole detection system - US20200250984A1 - Subrata Kumar KUNDU and **Naveen Kumar BANGALORE RAMAIAH**
- Combining visible light camera and thermal camera information - US20220230018A1 Subrata Kumar KUNDU, **Naveen Kumar BANGALORE RAMAIAH**
- Adjusting manufacturing parameters based on inspection - WO2021221621A1 - Xiaoliang zhu, Subrata Kumar KUNDU and **Naveen Kumar BANGALORE RAMAIAH**
- Dynamic image compression for multiple cameras of autonomous vehicles - US11546503B1 -, Subrata Kumar KUNDU, Xunfei ZHOU, **Naveen Kumar BANGALORE RAMAIAH,** Lars Watts, Kota Irie
- Precautionary observation zone for vehicle routing, - US20230080281A1 - Subrata Kumar KUNDU, Yashodeep Dilip LONARI, Xiaoliang Zhu, **Naveen Kumar BANGALORE RAMAIAH**

Awards

- Won "Wow- Raise the Bar" award – Poly -2022
- Won the "2nd prize Center for Technology Innovation Award" – Hitachi America, Ltd.
- Won "Above and Beyond award" – Hitachi America, Ltd for demonstrating stereo camera application in CES.
- Won "Best Performer Award" and "Customer Delight Award" – KPIT technology.

Education

San Jose State University, MS   08/2013 – 05/2015
GPA: **3.70/4.0**   **Electrical Engineering**

Dayananda Sagar College of Engineering, BE   08/2006 – 05/2010
GPA: **3.90/4.0**   **Electronics and Communications**