Sanil **Pande**

(+1) 412-626-8755 | spande@andrew.cmu.edu | sanilpande.github.io | sanilpande | sanilpande

Education

Carnegie Mellon University   *Pittsburgh, PA*

MASTER OF SCIENCE IN ROBOTIC SYSTEMS DEVELOPMENT   *May 2021*

QPA: **4.25/4.33**

   Coursework: Computer Vision, Visual Learning & Recognition, Robot Autonomy, Robot Mobility

Vellore Institute of Technology   *Vellore, India*

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING   *April 2019*

CGPA: **9.16/10.00**

Projects

Docking, Navigation and Safety Behaviors for an Autonomous Vehicle   *Pittsburgh, PA*

MRSD CAPSTONE PROJECT   *Jan '20 - Present*

- Performed simulation of an autonomous vehicle that docks and undocks with a modular pod on CARLA.

Optical Character Recognition using Neural Networks   *Pittsburgh, PA*

COMPUTER VISION COURSE ASSIGNMENT   *November '19*

- Implemented a fully connected neural network using NumPy, obtaining an accuracy of 77% on the NIST36 dataset.
- Implemented OCR to recognize handwritten alphabets and spatial information such as spaces and new lines.
- Implemented a neural network in Pytorch and consistently obtained an accuracy of >90% using OCR on test images.

Spatial Pyramid Matching for Scene Classification   *Pittsburgh, PA*

COMPUTER VISION COURSE ASSIGNMENT   *September '19*

- Created a dictionary of visual words using K-means clustering on the filter responses for a given set of training images.
- Used Spatial Pyramid matching to generate a model to classify the given scene in the test images.
- Utilized NumPy to create a neural network that emulates VGG-16 for scene classification.

Measurement of Spindle Error in a Lathe using Laser Spot Detection and Tracking   *Vellore, India*

BACHELOR'S THESIS   *Dec '18 - April '19*

- Detected projected laser spot using image processing techniques such as thresholding and morphology.
- Measured synchronous and asynchronous error by Fourier Series curve fitting.
- Measured spindle radial error using tracking algorithms in OpenCV.

Skills

Programming   C++, Python, MATLAB

Tools   Robot Operating System (ROS), Git, SolidWorks, Siemens NX, WorkNC

Libraries   Pytorch, OpenCV, Numpy, Scipy

Experience

Treknocom Engineering   *Pune, India*

ENGINEERING DESIGN INTERN   *May 2018 - June 2018*

- Utilized SolidWorks for surface modelling for fixtures, and piping and sheet modelling.
- Generated CNC toolpaths for roughing, semi and finishing using WorkNC.

JCB India   *Pune, India*

DESIGN INTERN   *June 2017*

- Worked on the design of Backhoe Loader models using Siemens NX.
- Contributed to part optimization by collecting part data for standardization.

Presentations

Spindle Radial Error Measurement Using Laser Pointer and Digital Camera   *NIT Jalandhar, India*

THE 6TH INTERNATIONAL CONFERENCE ON PRODUCTION AND INDUSTRIAL ENGINEERING   *June 2019*