

Aditya Narayan Das

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Education

Carnegie Mellon University, Pittsburgh, PA

GPA: 3.69 / 4.00

Master of Science in Computational Design & Manufacturing, December 2020

Coursework: Computer Vision (16-720), Engineering Computation (24-780),

Machine Learning (10-601), Computer Systems (15-513), Stat. Tech. in Robotics (16-831)

Vellore Institute of Technology, Vellore, India

GPA: 8.95/ 10.00

Bachelor of Technology in Mechanical Engineering, April 2019

Skills

- Programming Languages: Python, C, C++ | APIs: NumPy, PyTorch, SciPy, OpenCV | Technologies: Git

Experience

Intern June 2017

Aeronautical Development Agency, Bangalore, India

- Developed an algorithm based on multivariable regression to predict structural failure in fighter aircraft based on data from previous sorties using MATLAB.
- For the model the output variable (strain) was regressed on the input variables which affect the aircraft dynamics the most (G-Force, CAS, Yaw rate, Pitch rate, Roll rate)
- Achieved close to 96% accuracy on the test data set.

Projects

3-D Stereo Reconstruction (Python) October 2019

- Implemented a 3D reconstruction algorithm from scratch given a pair of calibrated camera intrinsics.
- Estimated Fundamental and Essential Matrices using point correspondences.
- Wrote stereo-matching and triangulation algorithms to reproject 2-D points in 3-D Space.

Optical Character Recognition (Python) November 2019

- Used image processing techniques to cluster, extract, and process raw text directly from images for evaluation.
- Trained a CNN in PyTorch to classify alphabets and numbers from these images.
- Achieved 79% accuracy (on test data)
- Performed a comparative study between an auto-encoder and PCA for dimensionality reduction in high-dimensional inputs.

Dynamic Storage Allocator (C) March 2020

- Implemented versions of malloc(), realloc() and free()
- Tested different policies for memory allocation. (First fit V/s Best fit)
- Achieved benchmark throughput using a segregated linked list of circular – doubly-linked lists for allocation of free-memory blocks.
- Reduced internal memory fragmentation by reducing overhead metadata in allocated memory blocks.

Tiny Shell (C) April 2020

- Wrote a tiny Unix Shell with job control and file I/O redirection using Linux Syscalls.
- Safely managed race – conditions between parent and child processes.

Peer Reviewed Publications (Computational Materials Science)

Aditya Narayan Das, Olivier Polit, Pradyumna Barua, and Ganapathi Manickam. “Large Amplitude free flexural vibrations of functionally graded graphene platelets reinforced porous composite curved beams using finite element based on trigonometric shear deformation theory.” *International Journal of Non-Linear Mechanics*(2019)

Aditya Narayan Das, Ganapathi Manickam, Pradyumna Barua, Mohamed Haboussi, “Investigation of thermo-elastic buckling of variable stiffness laminated composite shells using finite element approach based on higher-order theory”, *Composite Structures* (2019)