Kushashwa Ravi Shrimali

International Institute of Information Technology Naya Raipur
Blogs | kushashwaravishrimali@gmail.com | Kushashwa | krshrimali

Education

International Institute of Information Technology, Naya Raipur (IIIT-NR) **2016 – 2020**
B.Tech. : Computer Science and Engineering - 9.38 CGPA *Raipur, Chhattisgarh*
Awarded with Chairman's Gold Medal for Transformational Leadership

Technical Skills

Languages: C++, Rust, C, Python, Luascript
Skills: CUDA, Image Processing, Computer Vision, PyTorch, TensorRT, DeepSpeed, Deepstream, GStreamer, XLA, LLVM

Work Experience

Software Engineer, Abnormal Security **December 2022 – Present**
First Engineer Hire in India *Bangalore, India*

- Led integrations for multiple SaaS Platforms into the current pipeline for Security Posture Management feature launched at RSA Conference.
- Optimised Database Calls in the internal code base to avoid re-writing huge structures in the database and instead fetching at runtime when possible.

Research Engineer, Lightning AI **Feb 2022 – November 2022**
Lead: Lightning Flash; Maintainer: PyTorch Lightning, Lightning App *Remote*

- Lead for Lightning Flash library, hugely involved in enabling library for TPUs and supporting custom transformers.
- Maintainer for PyTorch Lightning library, major focus includes API design, and GPU and bfloat16 performance compared to PyTorch.

Software Developer (Open Source), Quansight **May 2021 – Feb 2022**
Core contributor to PyTorch up-stream, specially Testing and Sparse Tensors teams *Remote*

- Core contributor to PyTorch core code base with the teams at Quansight and Meta (Facebook).
  Link to the Pull Requests
- Developed a tensor generation utility for PyTorch to help users generate tensors of their choice of shape, device and type with one command. Documentation Link
- Projects contributed: Sparse Project, NumPy Compatibility, OpInfos for testing, Structured Kernels, PyTorch's special module

Software Developer, Care AI **April 2020 – January 2021**
Focused on deploying AI models at scale for thousands of hospitals across the US *Remote*

- Deployed a speech recognition app (end to end) on Android for Care AI device. The app keeps a record of the number of times the patient has washed his hand using Kaldi for Speech Recognition.
- Worked on deploying face detection model (end to end) on Android device and connecting the data with AWS IoT over the cloud.

Software Developer Intern, NVIDIA **January 2020 – April 2020**
Team: PyTorch GPU Development Frameworks Team *Santa Clara, California*

- Worked on optimising the CUDA kernel calls for Automatic Mixed Precision support by reducing the explicit kernel calls and doing the computations in the single call. This also involved profiling each kernel call using GPU Profiler and understanding of parallel programming concepts in TensorIterator (Array API of PyTorch).
- Improved test framework for universal unary functions in PyTorch and fixed CUDA level bugs for PyTorch functions.
- Added inverse trigonometric functions to PyTorch for both CUDA and CPU devices. This involved writing custom kernels for CUDA.

Computer Vision Intern, NTU Singapore **May 2019 - July 2019**
ROSE Labs *Singapore*

- Worked on License Plate Detection and Recognition using YOLOv3 based network. Target on detecting and recognizing characters for Double License Plates and on realtime dataset.
- Worked on using multiprocessing to generate synthetic dataset for training custom license plate recognition network.
- Worked on optimising space for the trained network using network pruning and TensorRT.

Computer Vision Intern, LearnOpenCV **March 2018 - May 2019**
Big Vision LLC *Remote*

- Worked on Face Averaging, Facial Landmark Detection (optimised to 9 point model as well), Convex Hull implementation, and PyTorch Image Classification. All the work was documented into blogs on the website of LearnOpenCV.

Projects

Context Pilot (Server - Rust, Extension - TypeScript, Lua), Author

- Binary to find top N (all for now) relevant files and authors for the given line of code/section of code/file. Repository Link
- Implemented an in-house DB to store results for any user call to boost performance (acts as a long-living cache). VSCode Extension Link NeoVim Plugin Link

LPython (Compiler and Programming Language), Contributor **July 2022**

- Added support for yield statements in the parser
- Fixed support for "in" in for Expressions (without breaking for statements)
- Fixed parsing for list comprehensions (bison)

OpenCV, Contributor

- Fixed errors for no faces detected in facial landmark detection model.
- Added BRISQUE implementation (also included testing for all systems including 32-bit, 64-bit, and operating systems: Windows, MacOS).