Kushashwa Ravi **Shrimali**

Software Developer · ML Engineer

(+91) 8209956918 | kushashwaravishrimali@gmail.com | www.krshrimali.github.io | krshrimali | kushashwa-ravi-shrimali-b6780152

Education

Kendriya Vidyalaya — *STPS, Suratgarh*

Class XII, AISSCE (CBSE) — *July 2015 - July 216*

- Percentage: 94.8/100

Industry Experience

Quansight — *Remote*

Software Developer (PyTorch - Open Source) — *May 2021 - Present*

- Contributing to PyTorch core code-base with the teams at Quansight and Facebook
- Projects contributed: NumPy Compatibility, OpInfos for testing, Structured Kernels, PyTorch's special module
- PRs: https://github.com/pytorch/pytorch/pulls/krshrimali
- Tech Stack: C++, Python, CUDA, JIT, Compilers, TorchScript, NumPy, pybind11

NVIDIA — *Santa Clara, USA*

Software Developer Intern (PyTorch Dev Team) — *January 2020 - April 2020*

- Contributed to introduce Type Promotion support for Unary Universal UFuncs in PyTorch for both CUDA and CPU devices.
- Improved test framework for universal unary functions in PyTorch.
- Fixed CUDA level bugs for PyTorch functions.
- Added inverse trigonometric functions to PyTorch for both CUDA and CPU devices.
- Tech Stack: C/C++, CUDA (Framework), CUDA GDB, PDB (Python Debugging), Nsight Compute, Python (for tests)

Care.AI — *Florida, USA*

Applied AI Engineer Intern — *April 2020 - September 2020*

- Optimized existing face recognition models in the pipeline for edge devices using TensorRT (C++)
- Created Python bindings for utility functions to optimize the code further.
- Implemented a speech recognition model using Kaldi for hand wash detector. The model was also deployed on a sample android app.
- Used Amazon Kinesis to stream videos for patients to cloud services.
- Technical Stack: TensorRT, PyTorch, Android Studio (for PoCs), Kaldi, C/C++, Python, RabbitMQ, Amazon Kinesis.

Big Vision LLC — *California*

Computer Vision and Machine Learning Intern — *March 2018 - May 2019*

- Worked on deploying Computer Vision applications for text detection in C#.
- Implemented face averaging using OpenCV in both C++ and Python on FIFA 2018 Dataset
- Implemented BRISQUE method for no reference image quality assessment and wrote a detailed blog on it's working.
- Optimized facial landmark detection models: Kazemi and LBF in OpenCV for 9-points instead of 68 points.

Open Source Experience

PyTorch

Contributor

- Please see all my PRs here.
- Fixed torch.prod for FP16 input tensors and FP32 output tensors.
- Added arcosh, arcsinh and arctanh to unary ops in PyTorch. This also includes tests and formulae for auto-grad in PyTorch.
- Add floating type promotion support for (some of the) Unary Floating UFuncs. This work acted as a motivation to revise type promotion strategy for unary functions.
- Mentors: Mike Ruberry (Facebook), Michael Carilli (NVIDIA), Piotr Bialecki (NVIDIA), Will Feng (Facebook)

OpenCV

Contributor

- Fixed errors for no faces detected in facial landmark detection model.
- Added implementation of No Reference Image Quality Assessment (BRISQUE). This included adding tests for 32-bit, 64-bit Windows/Linux/OSX systems, Arduino micro-controllers as well.
- Mentors/Contributors: Tom Clunie

BuffetCodes

Community Founder

- Developed **C++ File Manager library** while ignoring specified extensions, with an additional output of a tree-like structure (can be used in markdowns directly).
- Implementing DCGAN in C++, deployed the solution to a Docker file and automated testing using CI
- Linear Regression using PyTorch C++ API
- Contributors: Himanshu Singh

Skills

Frameworks	PyTorch, TensorRT, OpenCV, NumPy, Spacy, Deepstream, JAX
Programming Languages	C, C++, CUDA, Python
Skills	Unit testing, MLOps, Optimization, Software Development, DevOps

Research Experience

Rapid Rich Object Search (ROSE) Labs, NTU Singapore

Singapore

Visiting Researcher (Computer Vision) *May 2019 - July 2019*

- Created a sample dataset of 1M license plates using augmentation and parallel processing (to speed up the process).
- Trained custom model using YOLO and OCR-Net for license plate recognition, taking Top-5 accuracy for double license plates from 55% to 85%.

IIITM Gwalior

Gwalior

Visiting AI Researcher *December 2018 to January 2019*

- Explored existing AI models for UAV Robot communication. Performed calculations using A* search algorithm. The study was published in Procedia Computer Science.

Extracurricular Activity

YouTube (Kushashwa Ravi Shrimali)

Technical Content Creator *September 2020 - Present*

- Created a YouTube channel to develop things live on YouTube. Was always interested to share how reading through the source code can be a great experience, and I decided to it live on YouTube to help everyone out there.
- Implement projects live and show how not giving up after seeing random bugs helps a lot.
- The channel has received 1000 watch hours and 550 subscribers.

Technical Blog

Technical Blog Writer - PyTorch, OpenCV, C++ *July 2018 - Present*

- Talked about PyTorch C++ API, implemented non-trivial projects using the C++ API.
- Explained cropping a circle in OpenCV in both C++ and Python.
- Understanding how vectors are implemented in GCC compiler.
- Received >50k views and >10k unique users from >100 countries in the world.

Student Activity Council

IIIT Naya Raipur

Science and Technical Head *July 2018 to July 2019*

- Organized Techno-Cultural fest of the institute and headed the science and technology events in the fest.
- Started multiple clubs in the institute: AIML Society, TSoC (programming and development). All the work was done along with the team of SAC and President, SAC.

OpenStudy Inc

Palo Alto, California

Ambassador *July 2013 to July 2015*

- Led a team for OpenStudy Newsletter Programme (2 times) and once as a designer.
- Role to manage and organize the community at OpenStudy.