

Kushashwa Ravi Shrimali

SOFTWARE DEVELOPER · ML ENGINEER

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Education

International Institute of Information Technology, Naya Raipur

B.TECH IN COMPUTER SCIENCE AND TECHNOLOGY

- CGPA: 9.38/10

Naya Raipur, India

July 2016 - 2020

Kendriya Vidyalaya

CLASS XII, AISSCE (CBSE)

- Percentage: 94.8/100

STPS, Suratgarh

July 2015 - July 216

Industry Experience

Quansight

SOFTWARE DEVELOPER (PYTORCH - OPEN SOURCE)

- Contributing to PyTorch core code-base with the teams at Quansight and Facebook
- Projects contributed: Sparse Project, 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

Remote

May 2021 - Present

NVIDIA

SOFTWARE DEVELOPER INTERN (PYTORCH DEV TEAM)

- 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)

Santa Clara, USA

January 2020 - April 2020

Care.AI

APPLIED AI ENGINEER INTERN

- 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.

Florida, USA

April 2020 - September 2020

Big Vision LLC

COMPUTER VISION AND MACHINE LEARNING INTERN

- 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.

California

March 2018 - May 2019

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.