Krutika Bapat

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Objective

Research projects / Internships in Universities related to Computer Vision/Deep Learning/Machine Learning

Education

- **B.Tech Computer Science and Engineering,** IIIT Naya Raipur, GPA- 8.5/10 (July 2020)
- **AISSCE (CLASS XII),** Kendriya Vidyalaya, Raipur, India, 91.4% (95% PCM) (May 2016)
- **AISSCE (CLASS X),** Kendriya Vidyalaya, Raipur, India, CGPA 10.0/10.0 (May 2014)
- **Frameworks Used**: PyTorch, OpenCV, AWS Services, Scikit Learn, Matplotlib, Hadoop, SQL, Apache Spark
- **Languages:** Python, C, C++, MATLAB, R

Internship Experience

Deep Learning and Computer Vision Internship, ROSE (Rapid Rich Object Search) Labs, NTU Singapore.

- Deep Learning based Vehicle Color Cassification using DenseNet, and ShuffleNet.
  - Used Pytorch in Python and C++ for implementation, which includes 10,000 images of cars of 11 colors, with high blur , real time images.
  - Achieved 94% test accuracy.

Computer Vision and ML Internship, Big Vision LLC, Dr. Satya Mallick, California (May 2018 – May 2019)

- Deep Learning based Character Recognition on Synthetic Dataset (Accuracy: 96.3% on Test Dataset)
  - Used ImageMagick for Data Augmentation of synthetic dataset over random background images with random blurring and noise.
  - Used Modified LeNet and ResNet for training dataset.
  - Open Sourced: Character Classification (of Synthetic Dataset) using Keras (modified LeNet)
- Detecting circles and lines in a given Image using Hough Circle and Hough Line Transform
- Calculating Center of Blob for shapes existing in the input image using Moments in OpenCV
  - Open Sourced: https://github.com/spmallick/learnopencv/tree/master/CenterofBlob
- Shape Matching using Hu Moments in OpenCV
- Helped in creating Course Content for Computer Vision for Faces (http://courses.learnopencv.com).
- Stipend: $4 USD per Hour.

Computer Vision and Deep Learning Intern, IIT Bombay (May 2018 - July 2018)

- Contributed in ongoing project on Lung Segmentation in Medical Imaging using FRRNs(Full Resolution Residual network) and UNet Networks.
  - Libraries used: PyTorch, Tensorflow, Keras.
- Work under Dr. Amit Sethi, **(EEE Dept. IIT Bombay**).
- Data pre-processing and labelling of 1000 samples of Lung cancer images of patients.
- **Microsoft Technology Associate (2018)**
- **Verzeo(47 days) Internship, in collaboration with Microsoft (May-June 2018).**

Projects

- Inverse Cooking: Recipe Generation from Food Images, based on the latest research paper (https://arxiv.org/pdf/1812.06164.pdf), implementation in Pytorch. (June 2019)
- Video Stabilization using OpenCV , implemntation both in C++ and Python. (March 2019)
- Crowd Counting, based on CSRNet (dilated convolutions) using Pytorch. (April 2019)
- Generating Image using Text based on GANs. (Generative Adversarial Networks) Generating echos using RNNs (Recurrent Neural Networks) (December 2018)
- Generating tweets using LSTM's and RNNs.
- Predicting next word in a sentence using Natural Language Processing.
- Deep Learning implementation of VLSI using Stochastic Computing. (Jan 2018 - May 2018)

  Link: https://github.com/krshrimali/VLSI-Implementation-Of-Deep-Neural-Networks-Using-Stochastic-Computing-

- A team of 10 more students of IIIT NR under Dr. Ramesh Vaddi, Adjunct Professor, IIIT Naya Raipur.
- LFSR, Comparator ASIC Implementation and Verilog Implementation Stochastic Computing using Elliptic curve cryptography. Obstacle avoidance robot using Arduino and sensors.
- Work on flexiforce sensors and PIR Motion Sensor as a part of Workshop Series (Jan 2016 - Mar 2016)
- Multi Messenger, A terminal based messaging tool using Tkinter and SMTP modules (Mar 2017 - May 2017)
- Team Member: Kushashwa Ravi Shrimali, CSE Undergrad (‘20), IIIT NR.
- The project has been published on GeeksForGeeks and OpenHub. Links can be found here:
    - https://www.openhub.net/p/Multi-Messenger/
    - https://ww.geeksforgeeks.org/multi-messenger-python-project-messaging-via-terminal/
- GNU Radio project on understanding waveforms, and PSK Modulation, using RTL-SDR and GNURadio (July - Sept 2017)

Skills

- Programming:
    - Advanced: C++, Python, Julia, Shell Scripting.
    - Intermediate: P5 JS, SQL, Java
    - Beginner: Lua, Cython, MySQL Developer, R
- Tools:
    - Advanced: OpenCV, NumPy, Keras, Tensorflow, Scikit-Learn, PyTorch, MATLAB, Octave
    - Intermediate: Pandas, Matplotlib
    - Beginner: Django, Flask, OpenCV.js, Caffe, H2O
- Theory:
    - Advanced: Computer Vision, Deep Learning, Machine Learning
    - Intermediate: Web Development, Database Management, Data Analysis
- Softwares:
    - Intermediate: Adobe After Effects, Adobe InDesign, Blender
    - Beginner: GIMP

Other Experience

- ACM ICPC - Participant (Institute Level).
- Cleared second level Code-gemini contest.
- Vast experience on various cryptographic algorithms https://github.com/krutikabapat/Cryptography_Codes