Kushashwa Ravi Shrimali

Room Number 2018, Bhabha House, IIIT Naya Raipur | (+91) 8209956918 | **kushashwa16100@iiitnr.edu.in**

GitHub: https://github.com/krshrimali, LinkedIn: https://www.linkedin.com/in/kushashwa-ravi-shrimali-b6780152/

Objective

Research projects / Internships in Universities with **Deep Learning, Computer Vision and Machine Learning specialization**.

Education

B.Tech Computer Science and Engineering, IIIT Naya Raipur, GPA- 9.40/10 (expected Summer 2020)

AISSCE (CLASS XII), Kendriya Vidyalaya, STPS, India, 94.8% (95% PCM) (May 2016)

AISSCE (CLASS X), Kendriya Vidyalaya, STPS, India, CGPA 10.0/10.0 (May 2014)

Internship / Academic Projects

Text to Image Synthesis using Generative Adversarial Networks **(**undergoing**)**

- Reproducing results from StackGANs, StackGAN++, WCGANs for Oxford-102, Caltech UCSD Birds Dataset.
- Working on resolving problems with GANs (slow training and loss functions)
- Team: Krutika Bapat, Saurabh Kumar Singh (IIIT NR)
- Mentor: Dr. Vivek Tiwari (Asst. Prof. IIIT NR)

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

Computer Vision and ML Internship, Big Vision LLC, Dr. Satya Mallick (Mar 2018 - Present)

- QR Reader and book dimensions measurement using Homography Matrix and Ratio Comparison
  - Used QR Code Detection to detect the QR in an image.
  - Homography technique is used, feature detection, choosing the image of the QR code as the selected area.
  - Open Sourced: GitHub: Measurement of Book Cover using Homography Matrix
- Facial Landmark Detection Algorithms: FacemarkLBF, Kazemi and AAM
  - Work on implementation and testing of Facemark Algorithms in their research papers.
  - Creating own models on 9 point landmarks. Contributed to OpenCV Repository.
- Image Quality Assessment using BRISQUE Image Metric
  - No Reference Model BRISQUE Implementation.
  - Used AGGD, LIBSVM for prediction. Contributed to original code given in the research paper.
  - Blog: https://www.learnopencv.com/image-quality-assessment-brisque/
- Face Averaging for Teams qualified for World Cup 2018
  - Blog: https://www.learnopencv.com/average-faces-of-fifa-world-cup-2018/
- Convex Hull Algorithm (Sklanksky Algorithm, 1982) - Implementation using OpenCV
  - Blog: https://www.learnopencv.com/convex-hull-using-opencv-in-python-and-c/
  - Under development: Graham Scan version of Convex Hull in OpenCV
- Helped in creating Course Content for Computer Vision for Faces (http://courses.learnopencv.com).
- Stipend: $4 USD per Hour.

Verzeo Machine Learning Internship (Virtual)

- Field: Machine Learning, Duration: 47 Days
- **Became Microsoft Technology Associate** during internship.

AI and Deep Learning Research Intern, IIITM-Gwalior (November 2017 - December 2017)

- UAV Robot-Goal Communication and Path Deciding (with Obstacle Avoidance)
  - Comparison of results from A* Search, Probabilistic Modelling, Genetic Algorithms. Implementation using Python, MATLAB and Javascript.
- Explore efficient hybrid models being developed at IIITM Gwalior for Deep Learning.
- Work under Dr. Anupam Shukla, Dean Computer Science Dept., IIITM Gwalior.

Publications

- Ashish Upadhyay, Kushashwa Ravi Shrimali, Anupam Shukla, UAV-Robot Relationship for Coordination of Robots on a Collision Free Path, Procedia Computer Science, Volume 133, 2018, Pages 424-431, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2018.07.052. (http://www.sciencedirect.com/science/article/pii/S1877050918309979) Keywords: UAV; Mobile Robots; A*; PRM; UAV-Robot Relationship

Other Projects

Obstacle Avoidance Robot (Using OpenCV module and interfacing of Arduino with robot). (July 2017 - Sept 2017)

- Use of ultrasonic sensor to detect obstacles around the robot. The ultrasonic sensor moves 360 degrees around and then decides the path to be chosen.

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: Krutika Bapat, 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)

Heuristics Calculations : Manhattan and SLD (Web-based presentation) (Dec 2017 - Jan 2018)

- Implementation and a live demo to show Manhattan and SLD Metrics (most commonly used metrics).
- GitHub Project: https://github.com/krshrimali/heuristics_calculations
- Live Demo: https://krshrimali.github.io/heuristics_calculations/

Cartoonization and application of filters on a video/image using OpenCV (Jan 2018 - Feb 2018)

- Cartoonization using Bilateral Filters, Edge Filters, Blurring, Deblurring, Gaussian Noising and more. Gives Evil Look, Alien Look and more.
- Language: C++ and OpenCV
- Link to report: https://github.com/krshrimali/OpenCV_Work/blob/master/Cartoonifier_Report.pdf

Constellation Diagram and Line Encoding Demonstrations

- Aims to demonstrate constellation diagrams and line encoding methods used in Communication Systems and Networks.
- Line Encoding : https://github.com/krshrimali/Bits-representation
- Language: P5 JS

CV Now

- A Java command line application, made to make it easy for starters, students, and job applicants to make their CV.
- Link : https://github.com/krshrimali/CV-Now

Skills

- Programming:
    - Advanced: C++, Python, Julia, Shell Scripting
    - Intermediate: P5 JS, SQL, Java
    - Beginner: Lua, Cython, MySQL Developer, R
- **Deep Learning**:
    - 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