AAYUSH KUMAR

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CAREER OBJECTIVE

My research interests are interdisciplinary lying at the intersection of deep learning, computer vision, biomedical imaging and AI for Healthcare. I am motivated and passionate about AI for social good with an aim to become an avid researcher mostly focused in the domain of Biomedical Imaging and AI for Healthcare.

EDUCATION

- **Bachelors of Technology** (COMPUTER SCIENCE AND ENGINEERING)   2017 - 2021(expected)
  KIIT University, Bhubaneswar, OD, INDIA, GPA:9.43/10

- **Class XIIth** (CISCE)   2016
  Little Flower School, Gorakhpur, U.P., INDIA, GPA: 95/100

- **Class Xth** (CISCE)   2014
  Little Flower School, Gorakhpur, U.P., INDIA, GPA: 94/100

EXPERIENCE

- **Visiting Undergraduate Research Intern, Harvard University**
  Working on the Connectomics Project at the VCG lab under Prof. Hanspeter Pfister. Work involves bench marking mitochondria segmentation using 3D variants of various segmentation architectures.

- **Project Intern, IIT Bombay**
  Worked on oral cancer pre-screening and detection using Mask R-CNN and development of AI integrated mobile app for data collection from PHCs under Prof. Amit Sethi, ECE Department, IIT Bombay.

- **Summer Research Intern, IIT Kharagpur**
  Worked in the development of a computer-aided diagnostic tool for classification of lung nodules in CT images using computer vision techniques under Prof. Sudipta Mukhopadhyay, E&ECE Department, IIT Kharagpur.

- **Course coordinator, E-labs**
  Worked as a course coordinator to train and teach students in Machine Learning. E-Labs is a student technical forum which was started in 2015 to provide learning experience to fellow students in the various technical fields

PROJECTS

- **Retinal vessel segmentation using FCN**
  Segmentation of blood vessels was carried out on DRIVE dataset. Only green channel of the input image (RGB) was fed to FCN consisting of six convolutional layers and one each of max pool and up sampling layer. The accuracy achieved was 0.95% and area under the curve (AUC) was found to be 0.972 thereby outperforming most of the previous literature works.

- **CADx system for detection of malaria infected blood smears**
  The model is deployed on zyik.ml using AWS EC2 instance. Designed a low end convnet to accurately classify malaria infected blood samples. Validation accuracy achieved was 95.6%.The model works on par as compared to state of the art Resnet-18 network, due to which model can be run on mobile devices.

- **Anterior Cruciate Ligament(ACL) tear Classifier**
  Built a CNN classifier for anterior cruciate ligament tear classification using Alexnet on MRNet dataset released by Stanford ML group. Data augmentation was done to deal with less examples.The AUC achieved was 0.858 on train set and 0.876 on validation set.

PUBLICATIONS

- **MOSQUITO-NET: A deep learning based CADx system for malaria diagnosis**
  Aayush Kumar*, Sanat B Singh, Suresh Chandra Satapathy, Steven Lawrence Fernandes
  International Conference on Machine Learning (ICML), 2020 Workshop on ML for Global Health (Poster)

- **NUCLEI-NET: A Fully Convolutional Neural Network for Medicinal Drugs Discovery**
  Aayush Kumar*, Sohom Dey
  International Conference on Machine Learning (ICML), 2020 Workshop on ML for Global Health (Poster)

ACHIEVEMENTS

- Awarded the **IET Prize 2020** by **Institution of Engineering and Technology** after being nominated by KIIT University. The IET Prize is available to every university department offering an IET accredited course and Every year universities nominate their most outstanding student as the recipient of this award.

- Awarded the **MICCAI Student Participation Award 2020** as one of the 50 students worldwide.

- Selected for **MITACS GRI fellowship** to pursue a 12 weeks fully paid research internship at **ETS Montreal, Canada**.

- Selected as one of the 30 delegates all over India for Community based Healthcare solutions track to attend the **Design, Technology and Social Innovation Workshop-2020** organised by MIT and Harvard University under **MIT India Initiative**.

- Awarded a travel grant to attend the 7TH NATIONAL CONFERENCE ON COMPUTER VISION, PATTERN RECOGNITION, IMAGE PROCESSING AND GRAPHICS, **NCVPRIPG-2019** by Intel and IIIT Hyderabad as part of IDD challenge.

- Selected to participate in the **APIA International Innovation Accelerator Camp** in Beijing, from July 21 to August 2, 2019, as one of the 120 entrepreneurs from all over the world with a partial scholarship offer.

TECHNICAL SKILLS

Languages	: C, C++, Python, Java
ML frameworks	: PyTorch, OpenCV, Scikit learn
Web-Designing	: HTML, CSS, Flask, Nginx
OS	: Windows, Linux(Ubuntu)
IDE	: Visual Studio Code, Jupyter Notebook, Android Studio
CLOUD	: AWS

CO-CURRICULAR ACTIVITIES

- Campus ambassador for Techkirti-19, IIT KANPUR.

- Campus ambassador for Alchirenga19, IIT GUWAHATI.

- Campus ambassador for Blitzchlag19, MNIT JAIPUR

- LCA General Secretary in Little Flower School