Akash Palrecha

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EDUCATION

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE (BITS), PILANI   Pilani, RJ, INDIA

MSc. (Hons.) MATHEMATICS (CGPA:7.65/10)   Aug 2017 - Jan 2021

Relevant Coursework: Neural Networks & Fuzzy Logic, Machine Learning, Optimization, Data Structures & Algorithms, OOP

Teaching Experience: Teaching Assistant for **Neural Networks & Fuzzy Logic**: aid in assignments, final research paper project

Note: I dropped my dual B.E. EEE degree in my second year to focus full time on AI/ML.

ACHIEVEMENTS / LEADERSHIP

• Became a **FastAI International Fellow** for being a top contributor to FastAI code-base and forums.   Jan 2020

• **Pratibhashaali (Brilliant) Student** awarded by the Mathematics Dept. at BITS Pilani for achievements in academia.   April 2021

• Published on Matplotlib's Official Blog: *An in depth primer on Matplotlib's Figures, Axes and GridSpec.*   Dec 2019

PROFESSIONAL EXPERIENCE

Visiting Undergrad Researcher, **Visual Computing Group, Harvard University**   Surat (remote), India • June 2020 - May 2021

• Worked on SoTA supervised and unsupervised image **deblurring** and **super-resolution** methods, investigated possible improvements, mentored by Yulun Zhang, the author of SoTA SR model RCAN (ECCV'18)

• Proposed a new dataset for video instance segmentation with extremely long videos, proposed method to improve previous SoTA models' VIS performance on our dataset by more than 60% – **Submitted to ICCV'21**, mentored by Donglai Wei.

Part-time AI Researcher, **PIXXEL**   Pilani/Bengaluru, India • Jan 2020 - Feb 2021

• Worked on unsupervised methods to analyse satellite imagery datasets with expensive/non-existent labels.

• **Modified NMF algorithm** to be much more **stable**, require **no hyper-parameter tuning**, and work **significantly faster**.

AI Lead, **PIXXEL**   Pilani/Bengaluru, India • Feb 2019 - Jan 2020

• Worked on Pixxel's **AI Team Strategy** during its infancy; recruited, train on campus for a 5-strong AI Team

• Managed **11 AI/SWE Summer Interns** at Pixxel for BITS Pilani's PS-1 Co-op Program at Workbench Projects, Bengaluru, 2019.

• Led Pixxel's early research with GANs, perceptual losses and self-attention based models for deep learning on satellite imagery.

• Managed end-to-end **collection, labelling and versioning** of a dataset for segmenting Indian roads from high resolution satellite imagery in collaboration with MapMyIndia

INDEPENDENT PROJECTS

• *MXR-U-Nets for Real Time Hyperspectral Reconstruction from RGB Imagery:* As part of **CVPR NTIRE 2020**. Achieved lowest runtime among all participating teams ($0.03s/image$).

• *Java-ML:* Independently implemented a modular, completely extendable **neural network library in Java from scratch** with **PyTorch-like interface** (*no 3rd-party libraries used*). Implemented: Basic **Autograd**, initialization(Kaiming He, Gaussian, Random), Activation funcs:relu, sigmoid, tanh, tansigmoid, etc, matrix ops, generators, optimizers and loss functions.

PUBLICATIONS / OPEN SOURCE

• Banerjee, A., Palrecha, A., (2020). **MXR-U-Nets for Real Time Hyperspectral Reconstruction**. *arXiv e-print 2004.07003* [**Paper**] [**Code**]

• Arad, B., Timofte, R., Ben-Shahar, O., Lin, Y., Finlayson, G., Givati, S., Banerjee, A., **Palrecha, A.**, et al. (2020). **NTIRE 2020 Challenge on Spectral Reconstruction from an RGB Image**. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops* [**Paper**]

• Implemented **Cutmix Regularization** into **FastAI V2**'s Codebase as a general callback usable for *computer vision related models.*

SKILLS

- **Expert:** Python, PyTorch, FastAI, PyTorch Lightning, Deep Learning for Computer Vision.
- **Intermediate:** Scikit-learn, OpenCV, Pandas, Photoshop, Illustrator, Machine Learning for tabular data.
- **Basic/Technical:** Tensorflow 2.0 + Keras, EC2, SQL, Java, C, Swift, SwiftUI, JS.
- **Languages:** English(Fluent), Hindi(Native), Marwari(Native), Gujarati(basic listening)

EXTRACURRICULAR / MISCELLANEOUS

- **Sales Head** - Department of Live Events, BITS Pilani: responsible for handling **sales, marketing and distribution** of tickets for **professional live shows**, events and games in college fests. Handled **4 sold out live shows** with **3000+ attendees** each.
- **Talent Scouting**, Association of Rock @ BITS Pilani: responsible for **scouting new and upcoming Indie bands** for **Rockatves** (battle of bands) and concerts organized by ARBITS.
- **Drummer**, **Music Club**, BITS Pilani: played **25+ live shows** over 3 years, partly responsible for stage technical setup. Formed a **progressive-funk fusion** band with 4 other members.
- **Music**: basic skills with **Logic Pro** and similar **music production tools**, created drum tracks for popular electronic songs.
- **Digital Art**: intermediate skills with Adobe Photoshop Illustrator. Previoulsy a professional freelance graphic designer during school, **featured by Adobe on Behance**