Prakhar Kulshreshtha

https://ankuprk.github.io/

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Education

- **Indian Institute of Technology Kanpur** — Kanpur, India
  *B.Tech. with Distinction; Major in **EE**, Minor in **AI** (Dept. of CSE) & Linguistics; GPA: **9.0**/10.0* — *Jul. 2013 – May. 2017*
- **Maa Bharati Sr. Sec. School** — Kota, India
  Class XII (CBSE Board); Percentage: 93.0% — *May. 2012 – Apr. 2013*

Publications

- **P Kulshreshtha**, T. Guha, "An Online Algorithm for Constrained Face Clustering in Videos" In IEEE International Conference on Image Processing (ICIP) 2018, Athens, Oct 2018. **[paper][poster][code]**
- **P. Kulshreshtha**, A. Kar, A. Agrawal, S. Palakkal, L. Boregowda, "Annotation free quality estimation of food grains using Deep Neural Network" In British Machine Vision Conference (BMVC) 2019, Cardiff, Sep 2019. **[accepted]**

Experience

- **Samsung Research Institute Bangalore** — Researcher
  Advanced Technology Labs — *Jul'17 - present*
  - **Team Leader, Creative-Lab**:
    - Winner of 'SRI-B C-Lab Entrepreneurial Ideation Contest' for the idea 'Vision for quality estimation of food grains'
    - Led a team of three 'entrepreneurs' to create an app that clicks a photo of a sample of grains spread on a sheet, segments each instance of grain and classifies it, to get a final quality estimate of the sample.
    - Demoed at C-Lab Fair and SFAC HQ; patent filed in **IPO**; paper accepted in **BMVC'19**.
  - **Samsung Keyboard team, MM Depth Technology Division**:
    - Implemented Minimum Jerk Theory(MJT) based swipe generation algorithm for training Keyboard Swipe engine.
    - Designed an optimized N-gram LM for Indian languages, which resulted in reduction in load-time, suggestion-time, and model-size without compromising prediction accuracy (commercialized in flagship devices)
- **Character Interaction Graphs via Online Face Clustering for Movie Analysis** — B.Tech Project
  Dr. Tanaya Guha, Dept. of EE, IIT Kanpur — *Dec'16 - Apr'17*
  - Designed a shot-wise online face clustering algorithm that uses several spatio-temporal constraints, along with FACENET features, to obtain a robust representation of the facetracks (**published in ICIP'18**)
  - Temporal dynamics of the character-clusters formed are utilized in two movie analysis tasks: (i) segmentation of a movie into its high level semantic structures (acts), and (ii) retrieval of major characters in a movie
- **Computer Vision and Machine Learning** — Course Projects
  IIT Kanpur
  - Explored and reviewed Compressed-Sensing based reconstruction techniques (POCS, Sparse-MRI and Dict MRI) from Undersampled K-Space data of MR images (**Best Project Award**) **[ppt][report][code]**
  - Formulated and implemented a Stochastic Variational Inference (SVI) version for Hierarchical PMF, while the paper only had batch VB updates **[ppt][report][code]**
  - Modifying Stacked Attention Networks Architecture For VQA by trying different attention mechanisms on query-vector and image features **[ppt][code]**
  - Automatic quality estimation of wheat grain by distinguishing normal grains from foreign matter in an image of a spread out sample of Wheat grains (**Best Project Award**) **[ppt][report][code]**
- **Samsung Research Institute Bangalore** — Summer 2016 Internship
  Mentor: Mr. Vasu Kakkirala, Technical Manager, SRI-Bangalore — *May'16 - Jul'16*
  - Contributed in profiling of VR pipeline, analysis of Rendering, bug fixes and in refining the interface layer of Tizen OS based VR Engine Core, to be embedded in Web Browser for various Samsung Devices like GearVR

Achievements

- Cleared "**Professional**" level of Samsung Electronics Global Software Competency (SWC) test, (**passing rate: 5%**)
- **A*** grade (Outstanding Performance) in *Digital Image Processing* and *Fundamentals of Computing*, IIT Kanpur
- All India Rank **465** in JEE-Advanced 2013 out of 150k candidates **(top 0.3%)**

Technical Skills

- **Programming Languages**: C, C++, Python, Java, MATLAB
- **Tools & Libraries**: TensorFlow, OpenCV, NLTK, Scikit-Learn, Android Studio, Visual Studio, Arduino IDE

Relevant Courses

Recent Advances in Computer Vision, Modeling and Representation Techniques for Images, Digital Image Processing, Artificial Intelligence Programming, Bayesian Machine Learning, Online Learning and Optimization, Data Structures and Algorithms, Linear Algebra, Probability and Statistics, Digital Signal Processing, Statistical Signal Processing