Shubham Jain

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Education:

- **University of Illinois Urbana-Champaign** 2017 - 2019
  Master of Science in Computer Science GPA: **3.9/4.0**
  Relevant Courses: Computational Photography, Machine Learning in NLP, Text Information Systems Software Engineering, Social Spaces on Internet, Computer Graphics

- **Indian Institute of Technology Kanpur** 2013 - 2017
  Bachelor of Technology in Computer Science and Engineering CPI: **9.9/10.0**
  Relevant Courses: Computer Vision, Human Centered Computing, Machine Learning Techniques Natural Language Processing, Data Structures and Algorithms, Database Systems

Technical Skills:

- **Languages/Frameworks:** Python, PyTorch, Tensorflow, C/C++, MATLAB, Theano, Scikit-learn
- **Miscellaneous:** MySQL, Docker, WebGL, Bash, Scrapy,

Experience:

- **Visa Research** | Sr. Software Engineer | Palo Alto, US June 2019 - Present
  - Trained deep learning models to identify **fraudulent transactions** and handle extreme class imbalance
  - Models use RNN based methods and rely strongly on **embeddings** of the merchants as well as the cardholders which are learned using the **Word2Vec** bag-of-words method
  - Working on **Bi-Directional** RNN based networks to revoke an approved transaction using future transactions

- **Nvidia** | Intern | Santa Clara, US May - Aug 2018
  - Trained a network (in **Theano**) which finds **facial keypoints** around eyes, mouth, nose etc which are used to do head-pose detection and eye open/close detection
  - Converted this network to **TensorRT** via **Caffe** by adding custom layers which improved the runtime by **50%**

- **Adobe** | Intern | Noida, India May - July 2017
  - Worked on models to parse a **high-resolution form** to detect various things such as widget, signature box etc
  - Models used CNN and LSTM **with attention** to predict bounding box for parsing the lower resolution image

- **Prof. Yoshua Bengio, MILA** | Research Intern | Montreal, Canada May - July 2016
  - Trained **stacked GRU** model to generate natural sounds and **quantized** each input audio sample as a one-hot vector
  - Applied **transformations** like pitch shifting, time stretch on audio which gave a better generalization
  - Added **weight norm** and conditioned the model on sound categories to generate a larger variety of sounds

Achievements:

- Awarded Academic Excellence Award **three times** in a row for exceptional performance at IIT Kanpur
- Secured **60th** rank out of 250 teams in **ACM-ICPC Amritapuri Regionals**
- Secured an All India Rank of **210** in IIT-JEE out of **1.4 million** candidates

Projects:

- **Landmarks for Clothing Retrieval** | Master's thesis | UIUC Aug 2018 - Apr 2019
  - Used **VGG16** network with **Zoomout** to extract features around clothing landmarks to enhance retrieval results
  - Used **contrastive loss** to fine-tune the VGG model and k-Nearest Neighbour (**k-NN**) to do retrieval
  - Improved **top 3** and **top 5** accuracy by **15%** by combining landmarks' features and features learnt from whole image

- **Image generation with refinement and NN** | Independent Study | UIUC Aug - Dec 2017
  - Tackled lack of diversity and centered images, the 2 issues that Generative Adversarial Network (**GAN**) face
  - Model learnt to produce realistic from a image with an object with similar pose cut-pasted on an existing object

Publications:

- **SampleRNN: An Unconditional End-to-End Neural Audio Generation Model, ICLR 2017**
  - Worked on a deep learning based model that learnt to generate audio samples that captures underlying variations in the sequence over very long time spans and was preferred during human evaluation over competing models