Nishant Mishra

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Education

- **McGill University** — *Montreal, Canada*
  Master of Science(MSc Thesis) - Computer Science; GPA: 4.0/4.0 — *Sep 2019 -*
  Relevant Courses: *Applied Machine Learning, Fundamentals of Computer Vision, Natural Language Processing, Graph Representation Learning, Reinforcement Learning, Probabilistic Graphical Models(MILA)*
  Teaching(Graduate TA): *Fundamentals of Computer Vision, Artificial Intelligence*
- **Birla Institute of Technology** — *Ranchi, India*
  Bachelor of Engineering(BE) - Electronics and Communication; GPA: 7.92/10 — *Aug 2014 - Jul 2018*
  Relevant Courses: *Engineering Mathematics, Microprocessors and Microcontrollers, Programming in C and UNIX, Data Structures, Digital Signal Processing, Speech Processing and Recognition*

Experience

- **McGill University(AIPHL)** — *Montreal, Canada*
  Graduate Research Assistant (Full-time) — *May 2020 -*
  - Working under the supervision of **Dr.Peter Savadjiev** on application and intersection of ***Deep Learning in Digital Histopathology*** using Head and Neck Cancer detection microscopy data
  - Using Local Competitive Algorithm for Unsupervised segmentation of Tumor region and subsequent downstream tasks
- **Signzy Technologies** — *Bengaluru, India*
  Software Developer: Machine Learning and Computer Vision (Full-time) — *Jul 2018 - Jul 2019*
  - Worked on developing machine learning solutions for ***digitization of the bank account opening process*** which has now been used to open around 20000 accounts nationwide by premiere banks.
  - Worked on a multitude of Computer Vision and Machine learning based problems including ***OCR, face recognition, object detection, Image forensics, Liveliness Detection, and Image Quality Assessment***.
- **Signzy Technologies** — *Bengaluru, India*
  Machine Learning and Computer Vision Intern (Full-time) — *Jan 2018 - Jun 2018*
  - Developed an in-house ***Optical Character Recognition pipeline(DORY-OCR)*** including automatic cropping, rotation, text detection and recognition for Indian ID cards.
  - Developed an in-house *Achieved state of the art performance(equivalent to Google OCR)* with 0.80 F1 score on our custom validation data.
- **Institut de Recherche en Informatique de Toulouse(IRIT), Universite Paul Sabatier** — *Toulouse, France*
  Summer Research Intern — *May 2017 - Jul 2017*
  - Worked on the project ***'Optical Character Recognition in Lecture Videos for the enrichment of Automatic Speech Recognition(ASR) system'*** under the supervision of **Dr. Christine SENAC** and **Dr. Benjamin BIGOT.**

Projects

- **INCREMENTAL KNOWLEDGE GRAPHS**: Proposed an incremental learning problem for Knowledge Graphs to obtain representations for new entities and also update the representations of old entities
- **GENERIC EXTRACTION MODULE**: Trained a generic biLSTM model using both word and character level embedding for information retrieval from text OCR outputs
- **ANOMALOUS ACTIVITY RECOGNITION**: Using traditional computer vision and deep learning algorithms for Anomalous activity detection from CCTV camera feed
- **IMAGE QUALITY ASSESSMENT**: An ensemble model to quantify image quality to filter poor quality images at the client end to prevent redundant processing
- **OTHER KEY PROJECTS**: In-house OCR engine for Indian ID cards, OCR in Lecture Videos for the enrichment of Automatic Speech Recognition(ASR), Image stitching algorithm for creating panoramas, Online Learning Of Temporal Knowledge Graphs, Speaker Recognition and Verification system, CropNET:Regression based automatic foreground cropping, Automatic Document Field Highlighter, Reproducibility and Analysis of Deep Policy Gradient methods for Reinforcement Learning, Indian Sign Language Classification

Publications

- **Conference Paper**: Mishra, Nishant, et al. ***"Performance Evaluation of Neural Networks for Speaker Recognition."*** 2019 IEEE International Conference on Electrical, Computer and Communication Technologies (ICECCT). IEEE, 2019.
- **Thesis**: Nishant Mishra, Prasun Anand, Zainab Feroz ***'Integrated system for interconversion of speech and Indian sign language'***, Senior Thesis, BIT Mesra,2018

Skills Summary

- **Languages and Frameworks**: Python, C++, MATLAB, PyTorch, TensorFlow, Keras, JavaScript, Linux shell scripting
- **Tools and Libraries**: OpenCV, scikit-learn, Pandas, Flask, NLTK, Git, MongoDB, Caffe, Hugging Face, OpenAI-gym

Top Accomplishments

- Awarded ***Mitacs Research Training Award Fellowship*** – July,2020
- Awarded McGill University Graduate School Funding - September,2019
- Achieved **AIR 45** in ***Nationwide Education and Scholarship Test(NEST)*** - May, 2017
- Achieved **National Rank 7 and State rank 1(twice)** in ***Intl English Olympiad (conducted by British Council)*** - 2012-13