VIJAY PRAKASH DWIVEDI

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RESEARCH INTERESTS

- Deep Learning and Applications, Graph Representation Learning

EDUCATION

- **NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE**   **2019 - PRESENT**

Doctor of Philosophy (PhD) in Computer Science   Supervisor: Prof. Luu Anh Tuan/Prof. Xavier Bresson
Research Area: *Deep Learning for Graph Structured Data*
Current Progress:
-Benchmarking Graph Neural Networks, [[Paper], [Code Repo]]
-Graph Transformer Architecture, [[Paper], [Code Repo]]
-Contributed open-source code with 1,650+ GitHub stars

- **MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY ALLAHABAD, UP, INDIA**   **2014 - 2018**

Bachelor of Technology in Computer Science and Engineering

RESEARCH EXPERIENCE

FEB-JULY, 2019

RESEARCH ASSISTANT, Nanyang Technological University, Singapore   **Mentor**
Deep Learning for Graph Structured Data   Prof. Xavier Bresson

- Worked on graph neural network architecture that performs improved attention with multiple attention coefficients to aggregate neighborhood information in a message passing neural network.

DEC 2018 - FEB 2019

SOLUTION CONSULTANT, Francium Technologies Pvt Ltd, Chennai   **Mentor**
Removal of Noise in Document Image Processing   Arun Prakash

- Developed a Masked RCNN based model to remove noise (signatures/stamps/tags) for processing document images in automatic text retrieval

MAY-JULY, 2017

RESEARCH INTERN, International Institute of Information Technology (IIIT) Hyderabad   **Mentor**
Beyond Word2Vec: Embedding Words and Phrases in Same Vector Space   Prof. Manish Shrivastava

- Designed a new Siamese Recurrent Neural Network (RNN) based approach trained with contrastive loss to generate vector representation of multi-word units (phrases/n-grams) maximizing the units' semantic meaning

MAY-JULY, 2017

RESEARCH INTERN (Remote), Cognitive Big Data Informatics Research Lab, University of Stirling   **Mentor**
Context Aware Multimodal Deception Detection Using Deep Learning   Prof. Amir Hussain

- Developed a novel methodology (multi-input modality network) to detect deceit using deep neural networks (LSTM for text, CLSTM for videos) and SVM classifier (for audio)

PUBLICATIONS

1. **Vijay Prakash Dwivedi** and Xavier Bresson. A Generalization of Transformer Networks to Graphs, AAAI Workshop on Deep Learning on Graphs: Methods and Applications (DLG-AAAI), 2021
2. **Vijay Prakash Dwivedi,** Chaitanya K Joshi, Thomas Laurent, Yoshua Bengio, and Xavier Bresson. Benchmarking Graph Neural Networks, arXiv preprint 2003.00982, Under revision, 2020
3. **Vijay Prakash Dwivedi** and Manish Shrivastava. Beyond Word2Vec: Embedding Words and Phrases in Same Vector Space, International Conference on Natural Language Processing (ICON), Kolkata, 2017

4. **Vijay Prakash Dwivedi**, Saurav Jha, Deepak Kumar Singh and Ranvijay. Gender Classification of Blog Authors: With Feature Engineering and Deep Learning using LSTM Networks, International Conference on Advanced Computing (ICoAC), Chennai, 2017

BLOGS DESCRIBING WORKS

- **Graph Transformer: A Generalization of Transformers to Graphs,** 2021
  https://towardsdatascience.com/graph-transformer-generalization-of-transformers-to-graphs-ead2448cff8b
- **Introduction of Graph Neural Networks' Benchmarking Framework**, 2020
  https://towardsdatascience.com/benchmarking-graph-neural-networks-d644e0bf54d5
- **MaskRCNN for Stamp-Noise Removal in Images**, 2018
  https://blog.francium.tech/object-detection-on-documents-with-mask-rcnn-on-tensorflow-c7556654c167

TECHNICAL SKILLS

Languages & Frameworks

- Advanced: Python, PyTorch, Numpy, NLTK, C
- Intermediate: Keras, TensorFlow, JavaScript, JQuery, PHP, MySQL, Bootstrap, scikit-learn
- Basic: Ajax, BeautifulSoup4, selenium, Octave

Softwares and Tools

- OS: Linux, Windows
- Tools: LATEX, Azure Data Factory, Google Cloud, Microsoft Office

TEST SCORES

GRE General: Overall: 323 - Verbal Reasoning 154, Quantitative Reasoning 169, Analytical Writing: 3.5

SCHOLASTIC ACHIEVEMENTS

- Recipient of NTU Research Scholarship Award for PhD research at NTU, Singapore
- 'Top 12' in 'Hack In The North 2017' – India's largest student-held hackathon by IIIT Allahabad with a student participation of 250+
- Full Scholarship for B.Tech (4 years) in MNNIT Allahabad under Nepal-Aid Scholarship Scheme by the Embassy of India, Kathmandu, Nepal   *[All Nepal Rank - **109**, Coverage - **US$ 18000**]*
- District Topper Award (Rank 1 in Parsa District, Nepal) in the Secondary School (Class X) Board Examinations in 2012

POSITION OF RESPONSIBILITIES

- President of NTU SCSE Graduate Students' Club (2021-present)
- Vice-President of NTU SCSE Graduate Students' Club (2020-2021)
- Coordinator of Hack 36, a 36-hour hackathon at MNNIT Allahabad, which featured 182 participants from 21 cities across India (http://www.hack36.com)
- Coordinator of the first TEDxMNNIT – independently organized TED event in April 2017 (http://www.tedxmnnit.in)
- Summit Coordinator and Technical & Content Head of 'Renaissance 2017 – An Entrepreneurship Summit' of MNNIT Allahabad (http://www.renaissance.ecellmnnit.in)
- President of Trinity Computer Council - official Computer Club of Trinity Int'l College Kathmandu, Nepal for the year 2013/14

REFERENCES

- **Dr Luu Anh Tuan** (anhtuan.luu@ntu.edu.sg)
  Assistant Professor, School of Computer Science and Engineering
  Nanyang Technological University, Singapore
- **Dr Xavier Bresson** (xavier@nus.edu.sg)
  Associate Professor, Department of Computer Science
  National University of Singapore