Arunav **Shandeelya**

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Education

International Institute of Information Technology Bhubaneswar — *CGPA: 7.04/10.0*

Bachelor of Technology in **Electrical & Electronics Engineering** — *July 2015 - August 2019*

Minor Specialization in Computer Science & Engineering

Publication

More to Diverse: Diversified Response Generation in Visual Dialog [Journal Paper] — *PLoS ONE*

Authors: **Arunav Shandeelya**, Mauzama Firdaus, Asif Ekbal

- Proposes an end-to-end neural training framework for the objective of generating diverse responses in a visual dialogue setting.
- Build contextual information using a dual encoder with parallel co-attention between modalities, for fine grained representation.
- Leverages stochastic beam search with Gumble Top K-tricks to achieve diversified responses while preserving the content.

Enhancing Perceptual Loss with Adversarial Feature Matching [Oral Presentation] — *IJCNN 2020*

Authors: A. Ravi Tej, **Arunav Shandeelya**, S. Halder, Vinod Pankajakshan

- Proposes a novel training framework that unifies adversarial and perceptual objectives for high-fidelity photorealisitc image generation.
- Leverages additional discriminator supervision to (i) filter the artifacts introduced by perceptual loss and (ii) stabilize adversarial training.
- Presented at **IEEE International Joint Conference on Neural Networks, Glasgow, United Kingdom** (IJCNN), 2020.

Research Experience

AI-NLP-ML Lab Indian Institute of Technology (IIT) Patna — *Research Assistant*

Supervisor: **Prof. Pushpak Bhattacharyya & Prof. Asif Ekbal**, Professor, IIT Patna — *July 2019- July 2020*

- *Reinforced Character Traits in Dialog Agent*:
  - Propose a novel neural framework PoPe-DG responsible for Polite-Personalized Dialogue Generation.
  - Formulate the objective as controllable dialogue generation capable to variate polite responses according to persona categories.
- *Interpretable Multimodal Fusion*:
  - Developed a block-superdiagonal fusion method to directly control intra-modality and inter-modality dynamics of tensor fusion.
  - Demonstrated superior performance over linear fusion for sentiment analysis on CMU-MOSI dataset (YouTube movie reviews).

Signal Processing Lab Indian Institute of Technology (IIT) Roorkee — *Research Collaboration*

Supervisor: **Prof. Vinod Pankajakshan**, Assistant Professor, (IIT) Roorkee — *May 2019-July 2019*

- Worked at the intersection of computer vision, machine learning and image forensics (Presented at IEEE-IJCNN 2020).

Industrial Experience

Egregore Labs — *New Delhi, India*

Software Engineer - Machine Learning — *Oct 2020 - Sept 2021*

- Developed and setup a robust end-to-end OCR engine (tables, form) to process unstructured documents leveraging algorithms and methods from on latest research such as DeepDeSRT, CascadeTabNet, TableNet, etc.
- Deployed efficient, production ready code for (table, form) extraction API and other deliverable modules using Flask framework.
- Design a POC for testing the classification and extraction prototype on unstructured financial documents. Achieved significant improvement in both the module by multiple internal QA and testing on the unknown documents.

PricewaterhouseCoopers (PwC) — *Kolkata, India*

Technology Consultant Internship — *May 2018-Jul 2018*

- Designed a decision insight platform using ML algorithms based on various KPIs, for Finance Cockpit, that add cost-benefits to users and improves vendor selection strategy.
- Contributed in Finance Cockpit Dashboard, to import warning & alerts module for users with reasonable insights predicted by the model.
- Developed a prototype responsible for extracting keywords from scanned PDF documents (for e.g invoices) using dependency parser.

Xerox Research — *New Delhi, India*

Research Intern — *May 2016-Jul 2016*

- Worked jointly with GoodEd Tech to test his AI search engine. Contributed in data pipelines while studying classical ML algorithms.
- Designed an User Interface for a courses assignment scheduler using XML and Java, and integrate with an mobile application.
- Recorded videos and develop contents in various computer science modules, to support the financially challenged student in rural areas.

Projects

Polite Trait Variation in Personalized Dialogue [Research Project]

- Design an end to end polite dialogue generation model using human-annotated polite templates according to user profiles to induce polite traits variation.
- Extend Deliberation decoder concept to control the politeness across personalities using gated function.

Interpretable Multimodal Fusion [Research Project]

- Developed a tensor fusion method in PyTorch using block-superdiagonal tensor decomposition, and shows a superior performance over linear fusion for personality and sentiment analysis on CMU-MOSI dataset (`YouTube movie reviews`).

End-to-End Courteous Response Generation in Visual Dialog [Thesis]

- Developed an end to end prototype responsible to generate courteous responses in multimodal settings.
- Trained a classifier using stanford politeness corpus to rank dialog utterances based on the degree of politeness.

Prototypical Networks for Few-shot Learning (Finn et al., 2017) [Code]

- Implementation of Prototypical Networks, MAML for image classification using PyTorch.
- Extends the given function as meta objective for optimizing the image classification model.

Stock Movement Prediction [Code]

- Design a predictive model for stock movement by fundamental and technical aspects of financial market using kaggle NYSE dataset.
- Study and implemented different technical indicators including stochastic oscillator, relative strength index (RSI), etc to predict next day stock-prices of 501 stocks listed at NYSE.

Extractive Text Summarization [Code]

- Design a Extractive text summarization architecture using the concept of Stack RNN.
- Developed (i) 3 window context words and (ii) 5 window context words, to retain the contextual information and returns summary text.
- Reports state of the art accuracy 80%, 77.8% and 71.24% with compression ratios as 41%, 37% and 31% respectively.

Open Source

Oratio [Code]

- An open source pipeline to translate .mp4 video files to .mov video files in 20 different languages.
- Wrote Python Wrapper for (i) DeepL Translator Client and (ii) Multi-speaker transition (diarization) in video localization pipeline.

Technical Skills

Languages	Python, C++, Shell(Basic)
. Frameworks	TensorFlow, PyTorch, Keras, NLTK, FAIRSeq, Hugging Face, Scikit-learn, Flask
Scientific and Visualization	NumPy, Pandas, Matplotlib, Plotly
Softwares and IDE	Git, MySQL, Visual Studio, NI Multisim, Xilinx ISE Suit, MATLAB Simulink, Postman
OS and Cloud Services	Windows, Linux, AWS (S3, Poly, Textract, SageMaker, EC2)

Achievements

- Ranked **171/2000+** participant in **American Express** Machine Learning Hackathon.
- Ranked Top **200** out of **5.5K** in **Mckinsey Machine Learning** Hackathon.
- Ranked **51 out of 8K** in **Trexquant LLP** Alpha Trading Hackathon.

References

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