Shramay Palta

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Summary

I am broadly interested in the areas of **Natural Language Processing (NLP)** and **Computational Linguistics**, with a focus on **Explainability**, **Commonsense Reasoning** and **Bias and Fairness in NLP.**

Education

University of Maryland, College Park — *College Park, Maryland, USA*

Doctor of Philosophy, Computer Science. **GPA: 3.96/4.00** — August 2021-Present

Advisor: **Professor Rachel Rudinger.**

Birla Institute of Technology and Science, Pilani (BITS Pilani) — *Pilani, India*

Bachelor of Engineering, Electrical and Electronics Engineering . **First Division** — August 2017-May 2021

Thesis Supervisor: **Dr. Ashok Agrawala (UMD)** and **Dr. Navneet Gupta (BITS).**

Research and Work Experience

Computational Linguistics and Information Processing (CLIP) Lab — *College Park, Maryland, USA*

Graduate Student under Prof. Rachel Rudinger — November 2021 - Present

- Investigating different forms of **biases** in **NLP models and datasets.**

Human-Data Interaction Group, University of Maryland — *College Park, Maryland, USA*

Graduate Research Assistant under Prof. Leo Zhicheng Liu — September 2021 - March 2022

- Using **Natural Language Processing** Techniques to harvest design feedback from visualization comments on social media platforms like Reddit.

Maryland Information and Network Dynamics (MIND) Lab, University of Maryland — *College Park, Maryland, USA*

Research Assistant under Prof. Ashok Agrawala (Undergraduate Research Thesis) — May 2020 - February 2021

- Analyzing the spread of **COVID-19 and Flu virus** on campus using location and breathing data collected from **Spire Tags**. Part of the PROMETHEUS Project in collaboration with the School of Public Health.

Global Health Centre, Graduate Institute of International and Development Studies — *Geneva, Switzerland*

Research Intern under Dr. Amandeep Gill, Executive Director, UNSG's Panel on Digital Cooperation — May 2020 - October 2020

- Researched the role of **micro-narratives** as proxy variables to fill in missing data, and to develop **human-centered benchmarks** for **digital health** and used **natural language techniques** to study the social, health, and mental impacts of the **COVID-19** pandemic.

TurnoutNow LLC — *Lancaster, Pennsylvania, USA*

Data Science Intern — May 2019-July 2019

- Using **real-time location data** from **IoT BLE Beacons** and **natural language generation** tools with live data connections to generate narratives for end users.

Publications

Fork: A Bite-Sized Test Set for Probing Culinary Cultural Biases in Commonsense Reasoning Models – ***Findings of the 61st Conference of the Association for Computational Linguistics (ACL 2023)***

Shramay Palta and Rachel Rudinger

Investigating Information Inconsistency in Multilingual Open-Domain Question Answering – ***Arxiv preprint***

Shramay Palta, Haozhe An, Yifan Yang, Shuaiyi Huang, Maharshi Gor

Activities

Reviewer: ACL 2023, EACL 2023, EMNLP 2022

Member: Graduate Admissions Committee, Department of Computer Science, University of Maryland.

Projects

Analyzing Inconsistencies in Multilingual Open-Domain QA — *College Park, Maryland*

Work with Prof. Jordan Boyd-Graber — March 2022- Present

- Investigating whether **multilingual question answering** can potentially expose users to unreliable information through **cultural differences, divergent national laws, or uneven resources**.
- Analyzing if **different retriever models** present different passages—and answers—given the same question in different languages different multilingual QA datasets.
- Different answers potentially reveal valuable information about per-language **resources disparity, and linguistic variation.**

Food and Culture in Commonsense NLP

College Park, Maryland

Work with Prof. Rachel Rudinger and Prof. Antoine Bosselut — November 2021- Present

- Investigating modern-day **commonsense reasoning** NLP Models and datasets like **Delphi, COMET, ATOMIC, and CommonsenseQA** to determine if they have an implicit or explicit **cultural bias** baked into them.
- Preparing a **dataset** of test bed questions that can be used to stress test these models using examples of cultural and social norms, material and physical differences to prove such biases.
- Testing multiple models like **BERT-base, BERT-Large, RoBERTa** to determine the effect on performance by measuring how the answer varies when the cultural context is explicitly or implicitly specified in the question and when it is not.

Detecting Dietary Activity with Wearable Earphones

College Park, Maryland

Work with Prof. Nirupam Roy — September 2021- December 2021

- Developed a technique to detect the types of food being consumed using **eSense**, a consumer wireless earphone device by Bell Labs.
- Used data from the microphone to **detect chewing activity** and classify the food being chewed as **solid, liquid or semi-solid**.
- Choosing **Convolutional Neural Networks (CNNs)** as the feature extractor, used standard **Conv2d** layers and a standard training and evaluation procedure to train the models both with and without the **Mel Spectrogram.**

Economic Psychology: Stock Market Prediction using BERT

BITS Pilani, India

Work with Prof. Rajneesh Choubisa — January 2021- May 2021

- Implemented a **neural network** for utilizing information in **SEC 8-K forms** for predicting the movement of the **S&P 500 index**.
- Used **BERT** for capturing the contextual information in the form of two methods: **Masked Language Modeling (MLM)** and **Next Sentence Predicting (NSP)**.

Darknet Insights using R and Python

BITS Pilani, India

Work with Prof. Vishal Gupta — August 2019-December 2019

- Used information from DNS queries to predict a **DDoS attack** from Darknet data from **Center for Applied Internet Data Analysis (CAIDA)** supercomputer servers of the **University of California, San Diego (UCSD)**.
- Implemented **Python scripts for feature extraction** (like TTL, IP length, Packet Count etc.) and **CAIDA's internal tool, corsaro** for large scale analysis of trace data.
- Used **vector quantization algorithms including K-means and EM** on the extracted features to predict DDoS attacks.

Skills

Languages	Python, R, SQL, Linux/Unix shell, Java, C++, C, Assembly Language.
Tools	Pandas, NumPy, NLTK, spacy, Keras, TensorFlow, PyTorch, scikit-learn, Matplotlib, Jupyter, Git, LaTeX, MATLAB, MySQL.
Key Courses	CommonSense Reasoning and Natural Language Understanding, Natural Language Processing, How and Why AI Answers Questions, Human AI Interaction, Advanced Numerical Optimization.
OS	MacOS, Linux, Windows, FreeBSD.

Achievements

2022	**Dean's Fellowship Award**: Awarded the Graduate School Dean's Fellowship Award for outstanding academic achievement.
2021	**Dean's Fellowship and Chair's Fellowship Award**: Awarded the Graduate School Dean's Fellowship and the Chair's Fellowship Award for outstanding academic achievement.
2015	**National Merit Holder**: One of the **top 0.1%** scorers across India in the board examinations conducted by Central Board of Secondary Education; Received Letter of Honour from the HRD Minister, Govt. of India.
2010	**World Robot Olympiad**: Represented India at the World Robot Olympiad held in Manila, Philippines and managed to secure a **world rank of 31** in my category.
2010	**Indian Robot Olympiad**: Awarded the **1st Runners Up Award** in my category for the north chapter.