Shubhashis **Roy Dipta**

No visa sponsorship required; EAD approved (Pending I485)

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EDUCATION

Ph.D. in Computer Science, UNIVERSITY OF MARYLAND, BALTIMORE COUNTY — Jan 2021 – December 2025 (Expected)

Specialization: **Video-Text Retrieval**, **Vision Language Model** (VLM), **Natural Language Processing** (NLP)

- Phi Kappa Phi Award - **Top 10% of STEM**. GPA 4.00/4.00 – **Top 1% of class**.

EXPERIENCE

Applied Research Scientist Intern, AMAZON — June 2025 – Aug 2025

- Incoming Applied Research Scientist Intern at Amazon Alexa Org.

Machine Learning Research Intern, SCALE.AI — June 2024 – Aug 2024

Tech Stack: PyTorch, DeepSpeed, Hugging Face, Kubernetes, dagster, RLHF, SQL, Weight & Biases

- **RLHF text2sql:** Used Online KTO (a novel method) and data augmentation to improve the BIRD benchmark accuracy **by 8 points** over the same size SFT model (Paper In ARR review).
- **Auto Eval:** Implemented AutoCOT, Self Critique to improve the current Auto Eval system by 6 points (**F1 score: 83 → 89**).
- **Many-Shot text2sql**: Implemented Many-Shot *text2sql* system, improving the total accuracy **by 8%** and per use case accuracy **by 12%**.

Graduate Research Assistant, UNIVERSITY OF MARYLAND, BALTIMORE COUNTY — Jan 2021 – Present

Tech Stack: PyTorch, Python, Hugging Face, Scikit-Learn, LLM, SQL, Spacy, NLTK, Pandas, Numpy, Matplotlib, Seaborn, Weight & Biases, Hydra

- **Video-Text Retrieval:** Enhancing Zero-Shot Multilingual Video-Text Retrieval through Outcome and Intent-Driven Modeling Utilizing Only Visual Features.
- **Event Modeling:** Achieved **8.5% improvement** over prior state-of-the-art approaches **in 2 datasets** and **across 4 evaluation metrics** by designing a novel, hierarchical, semi-supervised event modeling framework. (Oral Presentation on *SEM 23, ACL)
- **Multimodal Counterfactual:** Pioneering **first-of-its-kind** multimodal counterfactual dataset (**8k+ real-life events**), merging text and images for nuanced alternate timeline, a novel contribution to counterfactual reasoning and multimodal real-life event understanding.

Machine Learning (ML) Engineer, BACKPACKBANG.COM — Oct 2018 – Mar 2019

Tech Stack: PyTorch, Keras, Hugging Face, Large Language Model, NLTK, Python, MySQL, Elasticsearch, AWS EC2, Node.js, React

- **Boosted the sale by ≈23%** by improving existing product recommendation system using *Product2Vec* embedding.
- **Decreased server cost by ≈10%** by implementing an AWS Lambda-based ML pipeline for online learning.

Founder & Chief Technology Officer, UNISHOPR.COM — Jan 2019 – Jan 2021

Tech Stack: Python, Node.js, React, PostgreSQL, GraphQL, AWS Lambda, AWS Lightsail

- Single-handedly led a cross-functional team of 10, achieving **1,000+** active e-commerce users and **$100,000+/month** in orders.

TOP PUBLICATIONS

For a comprehensive list, visit my Google Scholar Profile

1. *Shubhashis Roy Dipta*, Mehdi Rezaee, and Francis Feraro. "Semantically-informed Hierarchical Event Modeling." Proceedings of the 11th Joint Conference on Lexical and Computational Semantics, ACL (2023)
2. *Shubhashis Roy Dipta*, and Sai Vallurupalli. "UMBCLU at SemEval-2024 Task 1A and 1C: Semantic Textual Relatedness with and without machine translation." Proceedings of the 17th International Workshop on Semantic Evaluation (SemEval-2024), NAACL (2024)
3. *Shubhashis Roy Dipta*, and Sadat Shahriar. "HU at SemEval-2024 Task 8A: Can Contrastive Learning Learn Embeddings to Detect Machine-Generated Text?." Proceedings of the 17th International Workshop on Semantic Evaluation (SemEval-2024), NAACL (2024)
4. *Shubhashis Roy Dipta*, [5 other Co-Authors]. "SEMal: Accurate protein malonylation site predictor using structural and evolutionary information." Computers in biology and medicine 125 (2020)

PROJECTS

For a comprehensive list, visit my Portfolio

Bird Chirping Identification — Tech Stack: PyTorch, Keras, TensorFlow, Python, Matplotlib, Seaborn, EfficientNet

- Secured a top-70 Kaggle ranking (**Top 6% - Bronze Medal**) by using EfficientNet on the spectrogram images with a weighted ensemble of framed timespan. Achieved **61.2% micro-average F1-score**

SeeBel: Seeing is Believing — Tech Stack: Data Science, PyTorch, Matplotlib, Seaborn, Python, Torchvision, HRNet

- **Increased interpretability by ∼60%** (user survey) in computer vision segmentation tasks by designing a **real-time visualization tool** for semantic segmentation, introducing training time visualization.

Amazon [Crawler] [Search Engine] — Tech Stack: Elasticsearch, Node.js, Express.js, Python, Multithreading, GCP

- Designed a distributed web crawler using 200 Google Compute Engine instances to extract **10M products' data**.
- **Enhanced the retrieval of 1M data** by implementing a **resource-efficient** search engine using Elasticsearch.

PROFESSIONAL SERVICES

- **Reviewer:** Reviewed 14+ papers in top NLP conferences (NAACL, CoNLL) & Bioinformatics journals.
- **Competitions:** 2 International Robotics Competitions (URC, USA; ERC, Poland), 2 ACM-ICPC, 25+ National Programming Competitions.
- **Open Source Contributions:** PyTorch Lightning, DocuSign, Hugging Face