Pratyay Banerjee

PERSONAL INFO

21 OCT, 1992
Apt 32, 910 E Lemon Street
Tempe, AZ-85281, USA
Citizenship : India, F1 Visa

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Scholar, LinkedIn, Website, Github

INTERESTS

Natural Language Understanding, Neural Reasoning, Vision + Language, Question Answering

EDUCATION

Ph.D., Computer Science & Engineering
Arizona State University, USA
GPA : 4.0 / 4.0

Aug 2018 - May 2022

Bachelor of Engineering, Computer Science & Engineering
Jadavpur University, India
GPA : 8.8 / 10

July 2014

PUBLICATIONS

To Find Waldo You Need Contextual Cues: Debiasing Who's Waldo
Yiran Luo, **P. Banerjee**, T. Gokhale, Y. Yang, C. Baral,
ACL, 2022

Semantically Distributed Robust Optimization for Vision-and-Language Inference
T. Gokhale, A. Chaudhary, **P. Banerjee**, C. Baral, Y. Yang
Findings of ACL, 2022

Unsupervised NLI using PHL Triplet Generation from Raw Text Corpora
N. Varshney, **P. Banerjee**, T. Gokhale, C. Baral
Findings of ACL, 2022

Weakly Supervised Relative Spatial Reasoning for Visual Question Answering
P. Banerjee, T. Gokhale, Y. Yang, C. Baral
ICCV, 2021

Weakly-Supervised Visual-Retriever-Reader for Knowledge-based Question Answering
M. Luo, Y. Zeng, **P. Banerjee**, C. Baral
EMNLP, 2021

Unsupervised Pronoun Resolution via Masked Noun-Phrase Prediction
M. Shen*, **P. Banerjee,*** C. Baral
ACL, 2021

Commonsense Reasoning with Implicit Knowledge in Natural Language
P. Banerjee*, S. Mishra*, K. Pal*, A. Mitra*, C. Baral
AKBC, 2021

WeaQA: Weak Supervision via Captions for Visual Question Answering
P. Banerjee, T. Gokhale, Y. Yang, C. Baral
Findings of ACL, 2021

Constructing Flow Graphs from Procedural Cybersecurity Texts
K. Pal, K. Kashihara, **P. Banerjee**, S. Mishra, R. Wang, C. Baral
Findings of ACL, 2021

Self-Supervised Test-Time Learning for Reading Comprehension
P. Banerjee, T. Gokhale, C. Baral
NAACL, 2021

Self-supervised Knowledge Triplet Learning for Zero-shot QA
P. Banerjee, C. Baral
EMNLP, 2020

MUTANT: A Training Paradigm for Out-of-Distribution Generalization in VQA
T. Gokhale*, **P. Banerjee***, C. Baral, Y. Yang
EMNLP, 2020

Video2Commonsense: Generating Commonsense Descriptions to Enrich Video Captioning
Z. Fang*, T. Gokhale*, **P. Banerjee**, C. Baral, Y. Yang
EMNLP, 2020

VQA-LOL: Visual Question Answering under the Lens of Logic
T. Gokhale*, **P. Banerjee***, C. Baral, Y. Yang
ECCV, 2020

Careful Selection of Knowledge to solve Open Book Question Answering
P. Banerjee, K. Pal, A. Mitra, C. Baral
ACL, 2019

VQA with Annotation-Efficient Zero Shot Learning under Linguistic Domain Shift
P. Banerjee, T. Gokhale, Y. Yang, C. Baral
SSL@NeurIPS, 2020

Bio-Medical Named Entity Recognition via Knowledge Guidance and QA
P. Banerjee*, K. Pal*, M. Devarakonda, C. Baral
ACM Health, 2021

Lexi: Self-Supervised Learning of the UI Language
P. Banerjee, S. Mahajan, K. Arora, C. Baral, O. Riva
Under Review

Reasoning about Effects of Actions using Transformers
P. Banerjee, C. Baral, M. Luo, A. Mitra, K. Pal, T. C. Son, N. Varshney
Under Review

Weakly-Supervised Learning-to-Rank and Knowledge Segregation for Open Book Science QA
P. Banerjee, C. Baral
Under Review

Unsupervised Question Answering: Trends, Challenges and Outlook
P. Banerjee, T. Gokhale, C. Baral
Under Review

Natural Language QA Approaches using Reasoning with External Knowledge: A Survey
C. Baral, **P. Banerjee**, K. Pal, A. Mitra
CoRR, 2020

Explanation ReGeneration using Language Models and Iterative Re-Ranking
P. Banerjee
TextGraphs-13, 2019

| **WORK EXPERIENCE** | ***Amazon Science*** | June 2022 - Current |

WORK EXPERIENCE

Amazon Science   June 2022 - Current
Applied Scientist II: Working on large-scale multimodal and unimodal Web Question Answering and IR.

Microsoft Research   May 2021 - Aug 2021
Research Intern: Working on Vision and Language Semantic GUI Understanding with Dr. Oriana Riva.

ASU - *Cognition and Intelligence Lab*   Aug 2018-May 2022
Research Assistant: Advisor Prof. Chitta Baral. Working on Neural Reasoning, Natural Language Understanding and Vision+Language. Also working on DARPA CHESS program to build NLP and Vision tools for Human-Computer Collaborative Software Security.

Flipkart - User Identity & Insights   Nov 2014 - August 2018
Senior Software Development Engineer 3: Built highly scalable systems to compute and serve User's identity information, personalization content and fraud detection data. Designed and developed components using Hadoop frameworks and tools. Developed User address based fraud detection leveraging User Graph. Feature enrichment and identification pipelines for supervised ML models such as Credit and Income Modelling of Users using E-Commerce affinities and User Graph attributes. Designed and developed internal tools for change-event propagation from MySQL to ElasticSearch, MySQL cluster management, One stop tool for User escalations and production issue management. Secured User PII data in system-system interactions and Big data usage. Developed several microservices like authentication and authorization services, address management services, rate limiting and rule engine based services. Worked on ML model engineering and productionising to ML problem modelling and data science. Designed ML model for creating selective incentives to push Users to higher segments, where a segment is defined as transactions per customer, lifetime value, gross merchandise value etc.

Yahoo SDC- International Sports Team   July 2014 - Oct 2014
Software Development Engineer 1: Enabled scaling of Sports Feed processing and extended APIs to support more sports to be served at Yahoo web scale.

Indian Statistical Institute, Kolkata - Crypto Lab   July 2013 - July 2014
Research Assistant: Advisor Prof. Goutam Paul. A Graph-Based FHE based on Homomorphic Bit Vector Encoding. Evaluated multiple schemes to exploit the hardness of graph path traversal algorithms and Homomorphic Bit Vector Encoding to derive a graph based FHE scheme.

IIT Kharagpur, India - CNERG Lab   Summer 2013
Research Assistant: Advisor Prof. Bivas Mitra. Detection and analysis of dynamic communities in time varying networks. We contrasted several community detection algorithms over time varying networks, built a test bed to analyze these algorithms. Derived useful insights of few community datasets, using these implementations.

SKILLS

Data Science : PyTorch, Tensorflow, Keras, Scikit Learn, Apache Spark ML, Pandas
Languages : Python, Java, C, C++, Scala
BigData : Spark, MR, Hive, Hadoop, Pig

AWARDS & HONORS

University Doctoral Fellowship	2018-2022
Graduate College Travel Award	2019-2022
Engineering Graduate Fellowship	2019-2022
CS PhD Conference Fellowship	2020-2022
Flipkart Hackathon Winner (200 Teams)	2016, 2018
Microsoft AI Challenge Top 5 (500 Teams)	2018
Top 0.001% in the Joint Entrance Exam of the IITs & NITs (1.3M students)	2010
CBSE Undergraduate Fellowship	2010-2014

TEACHING

Teaching Assistant: Principles of Programming	2018
Teaching Assistant: Natural Language Processing	2019,2020
Teaching Assistant: Frontier Topics in Vision and Language	2021

SERVICE & LEADERSHIP

Co-wrote and awarded an NSF grant Award: Abstract 2132724 RI: Small: SM-An Active Approach for Data Engineering to Improve Vision-Language Tasks.
Co-organizer of CVPR Workshop 2022 – O-DRUM: Workshop on Open-Domain Retrieval Under a Multi-Modal Setting.
Teaching and Research Awards Reviewer for the GPSA at ASU: 2019-21.
Reviewer: ECCV 2022, ACL ARR 2021-22, NAACL 2021-22, AAAI 2021-22, CIKM 2020-21, EMNLP 2020-22, ACL 2020-22, EMNLP Workshop 2019-22
Have lead and managed teams of size 2-4 on multiple projects in Flipkart.
Organized and hosted a Seminar course on Vision and Language at ASU, Spring 2021.

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* Equal Contribution