Sailik Sengupta

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Google Scholar
Linkedin
Website
Github

Languages

English, Bengali, Hindi

Programming

Python Java, C++
Pytorch MxNET
Latex HTML, JS
Gurobi, Pulp

Skills

Large Language Models
Auto-regressive & Embedding Model
Fine-tuning, Preference Learning, Decoding

Game Theory
Equilibria Computation, Trust and Negotiation, Multi-agent Reinforcement Learning

Automated Planning
Solvers, Human-in-the-loop, Explanations

Cyber-Security
Automated Dynamic Defenses, Security Policy Optimization, Treat Detection w/ ML

Deep Learning
Stochastic Ensembles, Weighted Loss functions, Mode Collapse

Education

2015 – 2020 » **Ph.D.** in Computer Science
Arizona State University, USA

2009 – 2013 » **B.E.** Computer Science & Engineering
Jadavpur University, India

Professional Experience

2020 – » **amazon Science** — Senior Scientist
Part of several launches at AWS– Titan LLM, Amazon Q, and Lex with expertise in conversation, orchestration, multi-linguality, robustness, and personalization.

2018 – 2020 » **IBM Research** — PhD Fellowship
Automated dynamic defences for cloud security.

2018 & 2019 » **amazon Science** — Intern Scientist
Teaching language models constraint adherence with RL.

2015 - 2018 » **Arizona State University** — Research/Teaching Assistant, Instructor, Lecturer
Optimization, Game Theory, Machine Learning, and Cybersecurity

2013 - 2015 » **amazon** — Software Development Engineer (& Security Certifier)
External payments launch team; built pay.amazon.com

Selected Awards

- [2023-2024] Filed 9 patents for LLM-related technology since July 2023 as either first or second inventor.
- [2018-2020] IBM Ph.D. Fellowship
- [2019] Top 3 Intern Research Projects, Amazon Research
- [2016-2020] Graduate Research Fellowship, School of Computing and AI (SCAI), ASU
- [2015] Developer of the Year, External Payment Systems, Amazon
- [2008-2009] National Olympiad participant in Physics, Chemistry and Mathematics

Service

- Reviewer for NeurIPS, ICML, ICLR, EMNLP, EACL, AAAI, IJCAI, ICNC, AAMAS, ICRA, and IEEE Journals (L-CSS, IFS, Network Security, Communications S & T).
- Review Process Committee and web-developer, IJCAI 2017.
- Coding event organizer, SRIJAN'13 Jadavpur University Tech Fest.

Peer-reviewed Publications

Refer to my website / google scholar for pre-prints.

ACL'24 **Can Your Model Tell a Negation from an Implicature? Unravelling Challenges With Intent Encoders**
Y. Zhang, S. Singh, S. Sengupta, I. Shalyminov, H. Su, H. Song, S. Mansour

NAACL'24 **FLAP: Flow-Adhering Planning with Constrained Decoding in LLMs**
S. Roy, S. Sengupta, D. Bonadiman, S. Mansour, A. Gupta

AAAI'24 **`Why didn't you allocate this task to them?' Negotiation-Aware Explicable Task Allocation and Contrastive Explanation Generation**
Z. Zahedi, S. Sengupta, S. Kambhampati

EMNLP'23 **Measuring and Mitigating Constraint Violations of In-Context Learning for Utterance-to-API Semantic Parsing**
S. Wang, S. Jean, S. Sengupta, J. Gung, N. Pappas, Y. Zhang

EACL'23 **Robustification of Multilingual Language Models to Real-world Noise with Robust Contrastive Pretraining**
A. C. Stickland*, S. Sengupta*, J. Krone, S. Mansour, H. He

AIJ'22 **Imperfect ImaGANation: Implications of GANs Exacerbating Biases in Facial Data Augmentation and Snapchap Selfie Lense**
N. Jain, A. Olmo, S. Sengupta, L. Manikonda, S. Kambhampati

NeurIPS'22 (W) **Parameter and Data Efficient Continual Pre-training for Robustness to Dialectal Variance in Arabic**
S. Sarkar, K. Lin, S. Sengupta, L. Lausen, S. Zha, S. Mansour

ICAPS'22 **RADAR-X: An Interactive Mixed Initiative Planning Interface Pairing Contrastive Explanations and Revised Plan Suggestions**
K. Valmeekam, S. Sreedharan, S. Sengupta, S. Kambhampati

EMNLP'21 (W) **On the Robustness of Intent Classification and Slot Labeling in Goal-oriented Dialog Systems to Real-world Noise**
S. Sengupta*, J. Krone*, S. Mansour

HICSS'21 **Software Deception Steering through Version Emulation**
F. Araujo, S. Sengupta, J. Jang, A. Doupé, K. Hamlen, S. Kambhampati

NeurIPS'20 (W) **Multi-agent Reinforcement Learning in Bayesian Stackelberg Markov Games for Adaptive Moving Target Defense**
S. Sengupta, S. Kambhampati

GameSec'20 **Moving Target Defense for Robust Fingerprinting of Electric Grid Transformers in Adversarial Environments**
S. Sengupta, K. Basu, A. Sen, S. Kambhampati

ICML' 20 (W) **Not all Failure Modes are Created Equal: Training Deep Neural Networks for Explicable (Mis)Classification**
A. Olmo*, S. Sengupta*, S. Kambhampati

IEEE Com S&T'20 **A Survey of Moving Target Defenses for Network Security**
S. Sengupta*, A. Chowdhary*, A. Sabur, D. Huang,
A. Alshamrani and S. Kambhampati

HCI Journal'20 **RADAR: Automated Task Planning for Proactive Decision Support**
S. Grover, S. Sengupta, T. Chakraborti, A. P. Mishra, S. Kambhampati

ML-Hat'20 **DAPT 2020-- Constructing a Benchmark Dataset for Advanced Persistent Threats**
S. Myneni*, A. Chowdhary*, A. Sabur, S. Sengupta, G. Agrawal,
D. Huang, M. Kang

WeCNLP'19 **Text Generation with Keyword Constraints-- a Hyrbrid Approach Using Supervised and Reinforcement Learning**
S. Sengupta, H. He, B. Haider, S. Gella, M. Diab

GameSec'19 **MTDeep: Moving Target Defense to Boost the Security of Deep Neural Nets Against Adversarial Attacks**
S. Sengupta, T. Chakraborti, S. Kambhampati

GameSec'19 **General Sum Markov Games for Strategic Detection of Advanced Persistent Threats using Moving Target Defense in Cloud Networks**
S. Sengupta, A. Chowdhary, D. Huang, S. Kambhampati

AAAI'19 (W) **Markov Game Modeling of Moving Target Defense for Strategic Detection of Threats in Cloud Networks**
S. Sengupta*, A. Chowdhary*, D. Huang, S. Kambhampati

Trust'19 **To Monitor or to Trust: Observing Robot's Behavior based on a Game-Theoretic Model of Trust**
S. Sengupta*, Z. Zahedi*, S. Kambhampati

ICNC'19 **Adaptive MTD Security using Markov Game Modeling**
A. Chowdhary, S. Sengupta, A. Alshamrani, A. Sabur, D. Huang

NDM'19 **iPass: A Case Study of the Effectiveness of Automated Planning for Decision Support**
S. Grover, S. Sengupta, T. Chakraborti, A. Mishra, S. Kambhampati

NDM'19 **CAP: A Decision Support System for Crew Scheduling using Automated Planning**
A. Mishra, S. Sengupta, S. Sreedharan, T. Chakraborti, S. Kambhampati

GameSec'18 **Moving Target Defense for the Placement of Intrusion Detection Systems in the Cloud**
S. Sengupta, A. Chowdhary, D. Huang, S. Kambhampati

AAAI'18 (W) **An Investigation of Bounded Misclassification for Operational Security of Deep Neural Networks**
S. Sengupta, A. Dudley, T. Chakraborti and S. Kambhampati

WeCNLP'18 **Decomposable Intents in Goal-Directed Conversations: Dataset and Challenges for End-to-End Learning**
S. Sengupta, R. Gangadharaiah, A. Mishra, M. Diab

ICAPS'18 **MA-RADAR - A Mixed-Reality Interface for Collaborative Decision Making**
S. Sengupta*, T. Chakraborti* and S. Kambhampati

AAAI'17 **RADAR - A Proactive Decision Support System for Human-in-the-Loop Planning**
S. Sengupta, T. Chakraborti, S. Sreedharan,
S.G. Vadlamudi, S. Kambhampati

AAMAS'17 **A Game Theoretic Approach in Strategy Generation for Moving Target Defense with Switching Costs**
S. Sengupta, S. G. Vadlamudi, S. Kambhampati, M. Taguinod, Z. Zhao,
A. Doupe and G. Ahn

AAMAS'17 **Moving Target Defense- A Symbiotic Framework for Artificial Intelligence and Security**
S. Sengupta

SoCS'16 **Compliant Conditions for Polynomial Time Approximation of Operator Counts**
T. Chakraborti, S. Sreedharan, S. Sengupta, T.K. Satish Kumar and S. Kambhampati

AAMAS'16 **Moving Target Defense For Web Applications Using Bayesian Stackelberg Games**
S. G. Vadlamudi, S. Sengupta, S. Kambhampati, M. Taguinod, Z. Zhao,
A. Doupe and G. Ahn

ReTIS'11 **An improved fuzzy clustering method using modified Fukuyama Sugeno cluster validity index**
S. Sengupta, S. De, A. Konar and R. Janarthanan