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 🎉.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 IEEEJournals (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 Explainable 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 Lens
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 Explainable (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. Gangadharaiyah, 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