



Somesh Singh

RESEARCH SCIENTIST · PHD STUDENT

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someshsingh22 | 🌐 someshsingh22 | 🐦 @someshsingh22 | 🎓 Somesh

Education

University at Buffalo, SUNY & IIIT-Delhi

Buffalo, NY, USA & New Delhi, India

PH.D. IN COMPUTER SCIENCE AND ENGINEERING

Jan 2025 - Present

- **Advised by** Prof. David Doermann (University at Buffalo) and Dr. Rajiv Ratn Shah (IIIT-Delhi); funded by Adobe.
- **Research** - Large Language and Vision Models, reasoning and planning through external and internal agents, human behavior modeling.
- **CGPA** - 9/10
- **Relevant Coursework** - Bayesian Machine Learning, Ethics in AI, Data Science, Reinforcement Learning

Birla Institute of Technology and Science, Pilani

Goa, India

B.E. (HONS.) IN COMPUTER SCIENCE, MINOR IN DATA SCIENCE

Aug 2018 - May 2022

- **CGPA** - Minor: 9.1/10, Overall: 8.25/10
- **Relevant Coursework** - Machine Learning, Deep Learning, Artificial Intelligence, Object Oriented Programming, Data Structure & Algorithms, Database Systems, Applied Statistical Methods, Operating Systems, Computer Architecture, Cognitive Neuro-science, Linear Algebra, Probability and Statistics, Computer Programming, Theory of Computation
- **Teaching Assistant** - Meta Learning, Machine Learning, Information Retrieval, Computer Programming, Natural Language Processing

Work Experience

Adobe MDSR Labs

Noida, India

RESEARCH SCIENTIST

Jul 2022 - Current

- Solely led the research and engineering of **AEM CWV Optimization Agents**, an agentic auto-fix system for Core Web Vitals shipped in Adobe Experience Manager Sites Optimizer (GA); delivered 25–35% LCP improvement (financial services), 11–14% LCP (semiconductor), and 13.62% mean LCP / 29.04% CLS (footwear) on production customer sites, scaling to \$8.3M+ ARR across 50+ paid customers. Patent filed; benchmark work under review.
- Led the research and drove the multimodal capabilities of **Adobe Express Caption Writer** (<https://new.express.adobe.com/schedule?postId=new>), productizing **Transsuasion** research into an LLM pipeline for generating and refining social media captions; drove +10% discovery and +6.23% premium conversion (Q/Q) for Adobe Express, powering 500K+ social media posts generated and scheduled quarterly.
- Pretrained **LLMs (7B–40B)** and **LVLs on 1T tokens** from scratch with custom data curation and tokenization pipelines, powering **Transsuasion**, **Teaching Human Behavior Improves Content Understanding Abilities of LLMs**, and the **Large Content and Behavior Model (LCBM)**.
- Research on **ExperiGen** and **ZIPP** integrated into **Adobe Experimentation Accelerator** within Adobe Journey Optimizer.

CommerceIQ

Bangalore, India

DATA SCIENTIST

July 2021 - Dec 2022

- Won Q4 Awards in team **enablers** for our work on digital shelves.
- Advertisement optimization in e-commerce platforms

- Researched on gradient estimation based white-box **adversarial attacks** on Automatic Essay Scoring (AES) systems with customized policies. **ArXiv:** <https://arxiv.org/abs/2109.11728>
- Worked on generating data free adversaries, investigating dataset bias and worked on post-hoc protection mechanisms against adversarial attacks. **ArXiv:** <https://arxiv.org/abs/2109.12406>
- **Supervised by** Prof. Rajiv Ratn Shah (Dept. of CSE & HCD, IIIT Delhi).

Selected Publications

Full list on Google Scholar

ExperiGen: Agentic Hypothesis Discovery from Observational Data

NeurIPS Spotlight

ARXIV

2026

Jishu Sen Gupta*, Harini S I*, **Somesh Kumar Singh***, Syed Mohamad Tawseeq*, Yaman Kumar Singla, David Doermann, Rajiv Ratn Shah, Balaji Krishnamurthy

Exploring Collaboration between a Language and a Non-Language Agent

EMNLP (Accepted)

ARXIV

2026

Harini S I*, **Somesh Singh***, Yaman K Singla, Rajiv Ratn Shah, David Doermann, Balaji Krishnamurthy

ZIPP: Zero-shot Image Personalization from Personas

ECCV (Accepted)

ARXIV

2026

Harini S I*, **Somesh Singh***, Yaman Kumar Singla, David Doermann, Rajiv Ratn Shah

SWE-WEB: Benchmarking AI's Capability to Optimize Web Performance

Under Review

2026

Ayush Singh*, Manaswi Singh*, Arnav Agrawal*, **Somesh Kumar Singh***, Yaman Kumar Singla, David Doermann, Rajiv Ratn Shah, Jitendra Ajmera

Unsupervised Memorability Modeling from Tip-of-the-Tongue Retrieval Queries

WACV

ARXIV

2026

Sree Bhattacharyya, Yaman Kumar Singla, Sudhir Yarram, **Somesh Kumar Singh**, Harini S I, James Z. Wang

Measuring and Improving Persuasiveness of Large Language Models

ICLR

OPENREVIEW

Singapore, 2025

Somesh Kumar Singh*, Yaman Kumar Singla*, Harini S I*, Balaji Krishnamurthy

Teaching Human Behavior Improves Content Understanding Abilities Of LLMs

ICLR

ARXIV

Singapore, 2025

Somesh Kumar Singh*, Yaman Kumar Singla*, Harini S I*, Changyou Chen, Rajiv Ratn Shah, Veeky Baths, Balaji Krishnamurthy

Large content and behavior models to understand, simulate, and optimize content and behavior

ICLR Spotlight

INTERNATIONAL CONFERENCE ON LEARNING REPRESENTATIONS

Vienna, 2024

Ashmit Khandelwal, Aditya Agrawal, Aanisha Bhattacharyya, Yaman Kumar, **Somesh Singh**, Uttaran Bhattacharya, Ishita Dasgupta, Stefano Petrangeli, Rajiv Ratn Shah, Changyou Chen, Balaji Krishnamurthy

Long-Term Ad Memorability: Understanding & Generating Memorable Ads

WACV

WINTER CONFERENCE ON APPLICATIONS OF COMPUTER VISION

Tucson 2025

Harini S I*, **Somesh Singh***, Yaman K Singla*, Aanisha Bhattacharyya, Veeky Baths, Changyou Chen, Rajiv Ratn Shah, Balaji Krishnamurthy

MINIMAL: Mining Models for Data Free Universal Adversarial Triggers

AAAI

ASSOCIATION FOR THE ADVANCEMENT OF ARTIFICIAL INTELLIGENCE

Vancouver, 2022

Swapnil Parekh*, Yaman Singla Kumar*, **Somesh Singh***, Changyou Chen, Balaji Krishnamurthy, Rajiv Ratn Shah

AES Systems Are Both Overstable And Oversensitive: Explaining Why And Proposing Defenses

Dialogues and Discourse

JOURNAL: DIALOGUES AND DISCOURSE

2022

Yaman Singla Kumar*, Swapnil Parekh*, **Somesh Singh***, Junyi Jessy Li, Rajiv Ratn Shah, Changyou Chen

Patents

Digital Content Analysis

Granted

US PATENT 11,907,508

2024

Yaman Kumar, **Somesh Singh**, WB George, TC Liu, S Basetty, P Prasoon, N Puri, et al.

Digital Content Analysis

Pending

US PATENT APP. 19/371,218

Yaman Kumar, **Somesh Singh**, P Prasoon, N Sainath, NS Joshi, N Srikanth, N Puri, et al.

Caption Generation for Digital Content

Pending

US PATENT APP. 18/819,418

Yaman Kumar, **Somesh Singh**, P Zoni, L Smith, D Shukla, AK Sharma, J Hamm

Systems and Methods for Predicting Content Memorability

Pending

US PATENT APP. 18/538,988

Yaman Kumar, **Somesh Singh**, HSK Indumathi, B Krishnamurthy, A Bhattacharyya

Honors & Awards

Jan 2026	Outstanding Young Engineer Award (OYEA) , Adobe	Noida, India
Q1 2026	Spot Award, AEM Sites Optimizer Agents , Adobe	Noida, India
Q4 2017	Spot Award, Transsuation Benchmarking , Adobe	Noida, India
2017	Merit Scholar , NSEC, Homi Bhabha Centre for Science Education	Mumbai, India
2022	Q4 Award, Digital Shelves Enabler , CommerceIQ	Bangalore, India

Leadership & Committees

2020	Events Head - PoR , Center for Technical Education	Goa, India
2020	Core Member , Society of Artificial Intelligence and Deep Learning	Goa, India
2020	Leader , Language Research Group	Goa, India

Extracurricular Activity

Chess

Lucknow, India

CASUAL PLAYER

Aug 2018 - Present

ELO Rating 1280 (Max) | Profile: <https://www.chess.com/member/someshsingh22>

Tech-Stack

Toolkits	Numpy, Scikit-Learn, PyStan, Tensorflow, PyTorch, Linux, MacOS, HTML, CSS, JS, Django, Flask
Programming	DSA, DBMS, OS, OOP
Languages	C/C++, Java, Python, Julia, $\text{\LaTeX}$