

Jyoti Aneja

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Employment

- Microsoft** Redmond, US
Member of Technical Staff, Microsoft Research AI Frontiers 2025–present
- Co-lead of Phi-4-reasoning-vision, a 15 billion parameter multimodal reasoning model (March 2026).
- Member of Technical Staff, Microsoft AI* 2024
- Core contributor to phi-4, a 14B language model that substantially surpasses GPT-4 on STEM-focused QA despite minimal architectural changes from phi-3.
- Senior Researcher, Microsoft Research* 2021–2024
- Key contributor to Phi-1, Phi-2, and Phi-3 (30M+ Hugging Face downloads), and Phi-bonaccì—an AI math tutor deployed across New York public schools.
 - Core creator of the sci-phi dataset, a key driver of Phi models’ superior performance on STEM tasks.
 - Research on language-augmented visual models, diverse image captioning, VAE priors: multiple top-tier publications (NeurIPS, CVPR, ICCV).

Publicity in Major Media

- Forbes, *Microsoft Builds A Compact AI Model That Decides When To Think* March 2026
- Wall Street Journal, *For AI Giants, Smaller Is Sometimes Better* July 2024
- Wired, *Pocket-Sized AI Models Could Unlock a New Era of Computing* May 2024
- New York Times, *Microsoft Makes a New Push Into Smaller A.I. Systems* April 2024
- Scientific American, *When It Comes to AI Models, Bigger Isn’t Always Better* Nov 2023

Education

- University of Illinois, Urbana-Champaign** Urbana-Champaign, US
Ph.D., Machine Learning and Computer Vision Dec 2021
Advisor: Prof. Alexander Schwing
Research centred on architectures and algorithms for generating high-quality, diverse outputs for image captioning and image generation.
- University of Illinois, Urbana-Champaign** Urbana-Champaign, US
Master of Science in Physics Dec 2015
Advisor: Prof. Bryan Clark
Research in computational condensed matter physics.
- Indian Institute of Technology, Kanpur** Kanpur, India
Master of Science in Physics Jul 2012

Preprints

(#): alphabetical ordering

Phi-4-reasoning-vision-15B Technical Report

Jyoti Aneja, Michael Harrison, Neel Joshi, Tyler LaBonte, John Langford, Eduardo Salinas
Microsoft Research Blog and Tech Report, March 2026

Phi-4 Technical Report

(#) Marah Abdin, **Jyoti Aneja**, Harkirat Behl, 24 more authors
arXiv 2024

Phi-3: A Highly Capable Language Model Locally on Your Phone

(#) Marah Abdin, Sam Ade Jacobs, Ammar Ahmad Awan, **Jyoti Aneja**, Ahmed Awadallah, Hany

Awadalla, Nguyen Bach, Amit Bahree, Arash Bakhtiari, Harkirat Behl, et al.
arXiv 2024

Phi-2: The Surprising Power of Small Language Models

(#) Marah Abdin, **Jyoti Aneja**, Sebastien Bubeck, 23 more authors
Microsoft Research Blog 2023

Textbooks Are All You Need

(#) Suriya Gunasekar, Yi Zhang, **Jyoti Aneja**, Caio Cesar Teodoro Mendes, Allie Del Giorno, Sivakanth Gopi, Mojan Javaheripi, Piero Kauffmann, Gustavo de Rosa, Olli Saarikivi, Adil Salim, Shital Shah, Harkirat Singh Behl, Xin Wang, Sebastien Bubeck, Ronen Eldan, Adam Tauman Kalai, Yin Tat Lee, Yuanzhi Li
arXiv 2023

Image Captioning Diversity under the Radar

Xiaoming Zhao, **Jyoti Aneja**, Harsh Agrawal, Alexander Schwing
Under Submission

Publications

Explaining Patterns in Data with Language Models via Interpretable Autoprompting

Chandan Singh, John X. Morris, **Jyoti Aneja**, Alexander M. Rush, Jianfeng Gao
Workshop: Analyzing and Interpreting Neural Networks for NLP, ACL 2022

ELEVATER: A Benchmark and Toolkit for Evaluating Language-Augmented Visual Models

Chunyuan Li, Haotian Liu, Liunian Harold Li, Pengchuan Zhang, **Jyoti Aneja**, Jianwei Yang, Ping Jin, Yong Jae Lee, Houdong Hu, Zicheng Liu, Jianfeng Gao
NeurIPS 2022 (Datasets and Benchmarks Track)

A Contrastive Learning Approach for Training Variational Autoencoder Priors

Jyoti Aneja, Alex Schwing, Jan Kautz, Arash Vahdat
NeurIPS 2021

Sequential Latent Spaces for Modeling the Intention During Diverse Image Captioning

Jyoti Aneja*, Harsh Agrawal*, Dhruv Batra, Alexander Schwing
ICCV 2019

Fast, Diverse and Accurate Image Captioning Guided By Part-of-Speech

Aditya Deshpande*, **Jyoti Aneja***, Liwei Wang, Alexander Schwing, David Forsyth
CVPR 2019 [Oral]

1st Runner-up in the Text-VQA Challenge-2019

Harsh Agrawal, **Jyoti Aneja**, Maghav Kumar, Alexander Schwing
VQA Workshop at CVPR 2019

Convolutional Image Captioning

Jyoti Aneja*, Aditya Deshpande*, Alexander Schwing
CVPR 2018

Gauge Symmetry of the 2D Quantum Spin Liquid in Quantum Kagome Ice

Jyoti Aneja, Bryan Clark
International Summer School on Computational Quantum Materials, Sherbrooke 2016

Negative Ion Rich Plasmas in Continuous and Pulsed Wave Modes in a Minimum-B Magnetic Field

Debaprasad Sahu, Shail Pandey, **Jyoti Aneja**, Sudeep Bhattacharjee

Industry Experience

NVIDIA Research Santa Clara, CA
Summer Internship Jun 2020–Aug 2020

- NCP-VAE: Variational Autoencoders with Noise Contrastive Priors — addressed the prior hole problem in VAEs using an energy-based prior trained with noise contrastive estimation.
- Mentors: Dr. Arash Vahdat, Dr. Jan Kautz.

Microsoft Research Redmond, WA
Summer Internship May 2019–Aug 2019

- Captioning in the Wild: developed image captioning models for novel scenes and objects unseen during training.
- Mentors: Dr. Neel Joshi, Dr. Besmira Nushi, Dr. Kenneth Tran, Dr. Hamid Palangi.

Snap Research Los Angeles, CA
Summer Internship May 2018–Aug 2018

- Captioning and Graph Convolutions: used graph convolution networks to improve diversity in image captioning models.
- Mentors: Dr. Ning Zhang, Ziyu Zhang.

Academic Service

Conference Reviewer — Reviewed 50 papers in top-tier AI/CV/ML conferences

- Vision: CVPR, ICCV, ECCV, WICV-CVPR Workshop 2018–present
- ML: NeurIPS, ICLR 2019–present
- Journals: IJCV, T-PAMI 2021–present

Outstanding Reviewer — CVPR 2021

Session Chair — Applied Machine Learning, CSL Student Conference, UIUC 2019

Teaching Experience

- Machine Learning, Applied Machine Learning (UIUC) multiple semesters
- Numerical Methods, Data Structures (UIUC) multiple semesters
- Classical and Quantum Mechanics, Electrodynamics, Statistical Physics (UIUC) multiple semesters

*Awarded **Excellent TA** multiple times for both CS and Physics courses.*

Awards & Recognition

- **Academic Excellence Award** — Best Graduating Student, IIT Kanpur
- **DST-DFG Award** — Dept. of Science & Technology (India) & German Research Foundation; selected for the Meeting of Nobel Laureates Students, Lindau, Germany
- **Departmental Travel Awards** — Awarded thrice: CVPR 2018, Princeton University, and University of Sherbrooke, Canada
- **Outstanding Reviewer** — CVPR 2021
- **Excellent TA** — UIUC, awarded multiple times for CS and Physics courses

References

- **Prof. Alexander Schwing**, aschwing@illinois.edu
Associate Professor, University of Illinois-Urbana Champaign
- **Sebastien Bubeck**, sebastien.bubeck@gmail.com
OpenAI; Previously Vice President and Distinguished Scientist, Microsoft Research
- **Prof. Yin Tat Lee**, yintatlee@gmail.com
OpenAI; Associate Professor, University of Washington

- **Prof. David Forsyth**, daf@illinois.edu
Fulton Watson Copp Chair Professor, University of Illinois-Urbana Champaign