

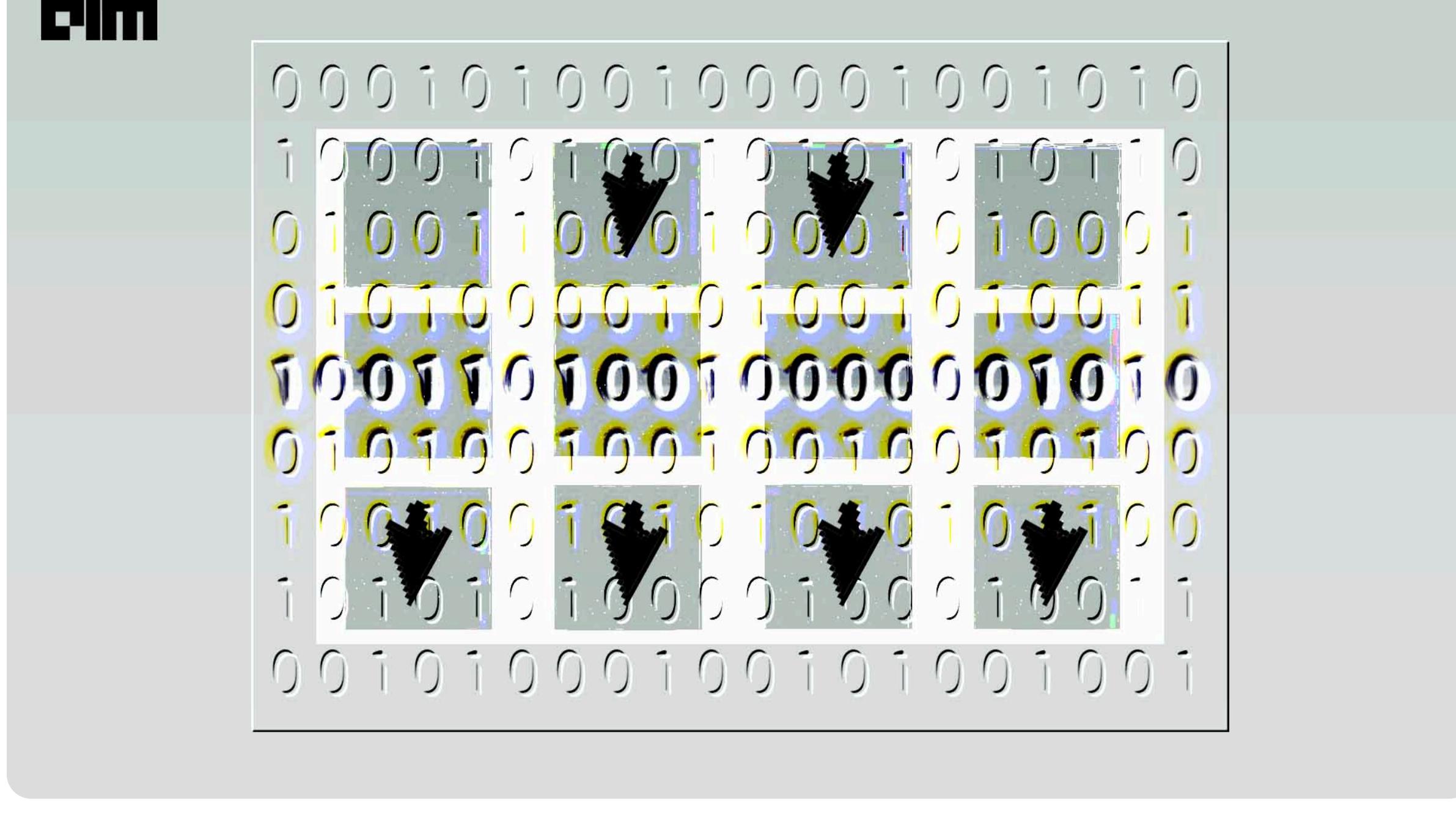
Published on January 23, 2024 In AI News & Updates

# CMU, Stanford Unveil Gaussian Adaptive Transformer

At the core of their research lies the Multi-Head Gaussian Adaptive Attention Mechanism (GAAM) and the Gaussian Adaptive Transformer (GAT)



[Join Us](#) [Follow Us](#)



**AIM RESEARCH** CELEBRATING DIVERSITY AND INCLUSION IN TECHNOLOGY



Researchers from Carnegie Mellon University, San Diego State University, and Stanford University team have unveiled their latest research paper titled 'Gaussian Adaptive Attention is All You Need: Robust Contextual Representations Across Multiple Modalities' aiming to reshape contextual representations.

The authors of the paper include Aman Chaudha, Aaron Elkins, and George Ioannides.

At the core of their research lies the Multi-Head Gaussian Adaptive Attention Mechanism (GAAM) and the Gaussian Adaptive Transformer (GAT), designed to elevate contextual representations across diverse modalities, including speech, text, and vision.

## Subscribe to our Newsletter

Join our editors every weekday evening as they steer you through the most significant news of the day, introduce you to fresh perspectives, and provide unexpected moments of joy

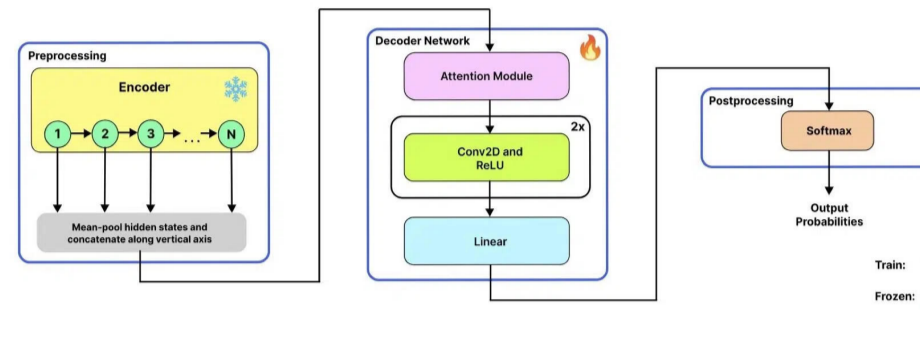
[SIGN UP](#)

Your newsletter subscriptions are subject to AIM Privacy Policy and Terms and Conditions.

GAAM introduces learnable mean and variance parameters into its attention mechanism, marking a significant leap in model performance.

**Gaussian Adaptive Attention is All You Need: Robust Contextual Representations Across Multiple Modalities**

Georgios Tsoulfas<sup>1\*</sup>, Aman Chaudha<sup>2\*</sup>, Aaron Elkins<sup>3</sup>, James Silberman<sup>4</sup>, Brown Center for Artificial Intelligence  
<sup>1</sup>Carnegie Mellon University, <sup>2</sup>Stanford University, <sup>3</sup>Georgia Institute of Technology, <sup>4</sup>Amazon



Introducing the GAAM and GAT, the researchers establish a fully learnable probabilistic attention framework. The incorporation of learnable mean and variance parameters empowers the model with dynamic recalibration of feature importance, resulting in a substantial enhancement of capacity.

The researchers introduce the Importance Factor (IF) as a novel learning-based metric. This metric enhances model explainability within GAAM-based methods, quantitatively evaluating feature significance and thereby improving interpretability.

Through rigorous testing across multiple modalities, the study validates the effectiveness of GAAM within GAT. The findings showcase its superiority in handling highly non-stationary data compared to conventional dot-product attention and earlier Gaussian-based attention mechanisms.

The paper demonstrates the seamless integration of GAAM with Grouped Query Attention, highlighting its compatibility with existing Pre-Trained Models (PTM). This integration not only showcases improved performance but does so with only a marginal increase in learnable parameters.

Read: [Meet the AI Expert Building Indic LLMs with ITTs](#)

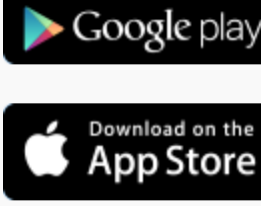


Mohit Pandey

Mohit dives deep into the AI world to bring out information in simple, explainable, and sometimes funny words. He also has a keen interest in photography, filmmaking, and the gaming industry.



Download our Mobile App



**Cozeus** Zoom Webinar

**Democratizing Analytics with AI**

Thursday, 1st February, 2024

9:30pm IST | 8:00am PST  
10:00am EST | 5:00pm CET

[REGISTER NOW](#)

Cozeus Concess - Cozeus Concess

**Praxis**

**AI Hackathons, Assessments & LMS**

Leading AI Talent Assessment Platform

[→](#)

**AIM RESEARCH**

**Pioneering Advanced AI Market Research**

Request Customized Insights & Surveys for the AI Industry

[→](#)

**CORPORATE TRAINING PROGRAMS ON GENERATIVE AI**

**Strengthen Your Team's AI Skills With Trusted Corporate AI Training**

Our customized corporate training program on Generative AI provides a unique opportunity to empower, retain, and advance your talent.

[→](#)

## 3 Ways to Join our Community

**Telegram group**

Discover special offers, top stories, upcoming events, and more.

[Join Telegram](#)

**Discord Server**

Stay Connected with a larger ecosystem of data science and ML Professionals

[Join Discord Community](#)

**Subscribe to our Daily newsletter**

Get our daily awesome stories & videos in your inbox

[Subscribe](#)

## MOST POPULAR

**Krutrim Secures \$50 Million, Becomes India's First AI Unicorn**

The funding round was led by prominent investors including Matrix Partners India.

**Google's Gemini Pro Beats GPT-4**

Meanwhile, Meta's Llama 3 is on the horizon and has the potential to surpass GPT-4.

**Meet the Creator of ॐ Llama**

Data Generative AI recently created an AI avatar named Acharya for the CSE Board.

**Equinix Launches Private Cloud Service for NVIDIA AI Supercomputing**

The service, available immediately, integrates NVIDIA DGX systems, NVIDIA networking and the NVIDIA AI Enterprise.

**FTC Launches Inquiry Into Generative AI Investments**

Alphabet, Amazon, Microsoft, Anthropic and OpenAI have 45 days to provide information on investments and

**5 Best Courses on Vector Database**

DeepLearning.AI, Udemy, and Coursera are among the most popular course providers for vector database.

**Anthropic Confirms Data Leak Amid FTC Probe**

Anthropic said the data (labeled vies "non-sensitive") containing a subset of customer names and open

**Microsoft, ETH Zurich Introduce SliceGPT For Compressing LLMs**

The research demonstrates how SliceGPT efficiently reduces the size of language models by streamlining up

**Centralising Data Governance through a Data Catalog**

"I love governance and cataloging because it's the intersection of human and data," said Elliot

**6 Job Openings for Responsible AI and Ethics in India**

AI companies across India are making sure that they build AI systems while focusing on

Our Mission is To Bring About Better-Informed And More Conscious Decisions About Technology Through Authoritative, Influential, And Trustworthy Journalism.

# SHAPE THE FUTURE OF TECH

CONTACT US →

AIM discovers new ideas and breakthroughs that create new relationships, new industries, and new ways of thinking. AIM is the crucial source of knowledge and concepts that make sense of a reality that's always changing.

Our discussions shed light on how technology is transforming many facets of our life, from business to society to culture.



DOWNLOAD OUR MOBILE APP

### WHO WE ARE

- About Us
- Recruiters
- Podcast
- Videos
- Events
- Careers
- Submit Your Blog
- Contact Us

### OUR BRANDS

- AIM Research
- MachineHack
- Best Firm Certification
- AIM Leaders Council
- Association of Data Scientists
- AIM Recruits
- AI Forum For India
- Lattice - ML Journal

### OUR SERVICES

- Advise with us
- Branded Content
- Recruitment
- Hackathons
- Recruitment Services
- Talent Assessment
- Research In Authority
- Corporate Trainings
- Response Market Research

### OUR CONFERENCES

- Copie
- MachineCon India
- MachineCon USA
- Machine Learning Developers Summit
- The Shing
- Data Engineering Summit

### AWARDS & LISTS

- Upcoming Awards & Lists
- Pedia Quizen
- AIM Awards
- Moby Awards For Excellence In AI
- 40 under 40 Data Scientists
- DATA IN TECH LEADERSHIP AWARDS
- Data Engineering Awards
- BEST FIRMS FOR Diversity & Inclusion IN TECH AWARDS

### FOR DEVELOPERS

- Community
- Masterclasses
- Practice Data
- Courses
- 365 Blogs
- Tutorial Blog
- Chartered Data Scientist Designation

