

# XI(SEAN) CHEN

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## EDUCATION

<b>University of Massachusetts Amherst</b>	<b>Amherst, MA</b>
• PhD in Computer Science (GPA: 3.9/4)	2019-2025
<b>Central South University</b>	<b>Changsha, China</b>
• B.E. in Computer Science (GPA: 3.9/4)	2014-2018

## EXPERIENCE

<b>Pretraining &amp; Scaling – Amazon AGI Foundations</b>	<b>Sunnyvale, CA</b>
<b>Applied Scientist (L5)</b>	2025.7 - present
<ul style="list-style-type: none"><li>Optimized pre- and mid-training recipes with scaling law for Amazon’s base models (<b>up to 173B parameters</b>).</li><li>Diversified reasoning data by contrastive learning and multi-teacher knowledge distillation for mid-training.</li><li>Refined and standardized evaluations across frontier foundation models with shot/prompt sensitivity analysis.</li></ul>	
<b>Amazon (AGI Foundations)</b>	<b>Seattle, WA</b>
<b>Applied Scientist Intern</b>	2024.7 - 2024.10
<ul style="list-style-type: none"><li>Applied parameter efficient LLM training with Quantized LoRA for scalable model adaptation.</li><li>Devised a model merging framework by aligning activation to accelerate multi-task LLM learning.</li><li>Implemented adaptive online learning with sample re-weighting for continuous LLM improvement.</li></ul>	
<b>University of Massachusetts Amherst</b>	<b>Amherst, MA</b>
<b>Research Assistant</b>	2019.9 - 2025.6
<ul style="list-style-type: none"><li>Designed an efficient cluster-aware LLM judge framework for online event extractions from temporal graph.</li><li>Zero-shot learning on LLM with an event retrieval pipeline from global multilingual news database.</li><li>Built a refined transformer-based global news graph with trillions of edges for event detection, recommendation.</li><li>Developed the largest multilingual news similarity dataset, leveraging active learning for retrieval and ranking.</li></ul>	
<b>University of California, Los Angeles</b>	<b>Los Angeles, CA</b>
<b>Research Intern</b>	2018.7 - 2018.12
<ul style="list-style-type: none"><li>Modeled the dynamics of opinions and personalities with probabilistic graph time series.</li><li>Devised an extended EM algorithm for learning the graph time series and get state-of-the-art performance.</li></ul>	
<b>Zhipu AI (Chinese OpenAI)</b>	<b>Beijing, China</b>
<b>Research Intern</b>	2018.3 - 2018.9
<ul style="list-style-type: none"><li>Searched and rank scholars with heterogeneous random forest (deployed on prestigious AI platform Aminer).</li><li>Clustered and visualize temporal scientific topics with refined genetic algorithm.</li></ul>	

## PROJECT

<b>Nova Foundation Model Training Optimization</b>
<ul style="list-style-type: none"><li>Optimized pre&amp;mid-training recipes for Amazon’s Nova base models, supporting official production release.</li><li>Designed efficient TB-scale data preparation pipelines to support high-throughput generation.</li><li>Analyzed optimization dynamics and failure modes through systematic ablations of data mixtures.</li></ul>
<b>Reasoning Data Diversification in Mid-Training</b>
<ul style="list-style-type: none"><li>Rewrote noisy webcrawl data with LLM judge to summarize reasoning information.</li><li>Designed contrastive knowledge distillation strategies to generate diversified reasoning data.</li><li>Quantified data reasoning depth with Essential-web classifier to optimize mid-training recipe.</li></ul>
<b>Cross-Model Evaluation and Benchmarking Framework</b>
<ul style="list-style-type: none"><li>Standardized evaluations across frontier foundation models with shot/prompt robustness check.</li><li>Enabled rigorous cross-model comparison through unified metrics and analysis workflows.</li><li>Generated evaluation insights to inform model selection and training roadmap decisions.</li></ul>

## Merge LLM with Online Activation Alignment

- Developed an activation alignment framework to merge LLMs across diverse tasks (math, coding, medical).
- Adapted activation weight for LLM online learning during parameter-efficient training and sampling.

## Efficient Cluster-wise LLM Judge for Event Identifications from Social Polls

- Designed a cluster-aware active learning framework to detect temporal events from Twitter poll texts.
- Modeled the evolution of social discourse by graph-based topic tracking and statistical analysis.

## Global Multilingual News Graph Learning with Transformers

- Devised a global news retrieval system, generating trillion-scale relations with dense embeddings and indexing.
- Built rank models for similar multilingual news using rules-based and active learning classifiers.

## LLM Question Answering Generation for Identifying Disasters

- Engineered zero-shot learning prompts to optimize LLM precision and recall in news event retrieval system.
- Built regression models to quantify country factors with greedy feature selection and event clustering.

## SELECTED PUBLICATION

### Amazon Nova 2: Multimodal reasoning and generation model

Amazon AGI Foundations. 2025.

### Identifying and Investigating Global News Coverage of Critical Events Such as Disasters and Terrorist Attacks

**Xi Chen\***, Erica Cai\*, Reagan Keeney, Ethan Zuckerman, Brendan O’connor, Przemyslaw Grabowicz. International AAAI Conference on Web and Social Media (**ICWSM, 9% Direct Accept**), 2025.

### Efficient Cluster-aware Large Language Model Judge for Event Identification from Social Polls

**Xi Chen**, Mayank Bumb, Vishal Kalakonnar, Przemyslaw Grabowicz. To appeal, 2025.

### Global News Synchrony and Diversity During the Start of the COVID-19 Pandemic

**Xi Chen**, Scott Hale, David Jurgens, Mattia Samory, Ethan Zuckerman, Przemyslaw Grabowicz. International World Wide Web Conference (**The Webconf, 15% Accept**), 2024.

### A Multilingual Similarity Dataset for News Article Frame

**Xi Chen**, Scott Hale, David Jurgens, Mattia Samory, Przemyslaw Grabowicz. International AAAI Conference on Web and Social Media (**ICWSM, 18% Accept**), 2023.

### Multilingual Document-level Similarity

**Xi Chen**, Ali Zeynali, Chico Camargo, Fabian Flock, Devin Gaffney, Przemyslaw Grabowicz, Scott Hale, David Jurgens, Mattia Samory. International Workshop on Semantic Evaluation @ **NAACL**, 2022.

## SKILL

### Core Expertise:

LLM: Pre&mid-training, Parameter-efficient fine-tuning, Model merging, RLHF, Retrieval-augmented generation(RAG).  
Search & Retrieval: News similarity search, Transformer-based retrieval models, Semantic indexing.  
Recommendation Systems: Graph modeling, Active learning for ranking, Multilingual content recommendations.  
Machine Learning & Optimization: Event detection, Time-series analysis, Probabilistic modeling.

### Tools & Frameworks:

Deep Learning: PyTorch, TensorFlow, Hugging Face Transformers.  
Big Data & Search: Spark, Elasticsearch, FAISS, SQL.  
Programming: Python, C++, R, Java, Linux.

## HONOR

NSF Student Travel Award, 2024

UMass CICS best portfolio finalist, 2023.

Research presented at top-tier computer science venues (Webconf, NAACL, ICWSM, TADA, IC2S2).

Nomination for Chinese Exceptional Student (1/6500 ISchool undergrads and grads), 2018.

Ranked global Top50 of Autochess players (50/millions, a world-class strategy game).