

NetoAI Launches T-VEC: Breakthrough AI Model Shatters Accuracy Limits for Telecommunications Industry

Industry's First Open-Source T-VEC Delivers Unprecedented Understanding of Telecom Jargon, Boosting AI Accuracy from ~75% to Over 90%

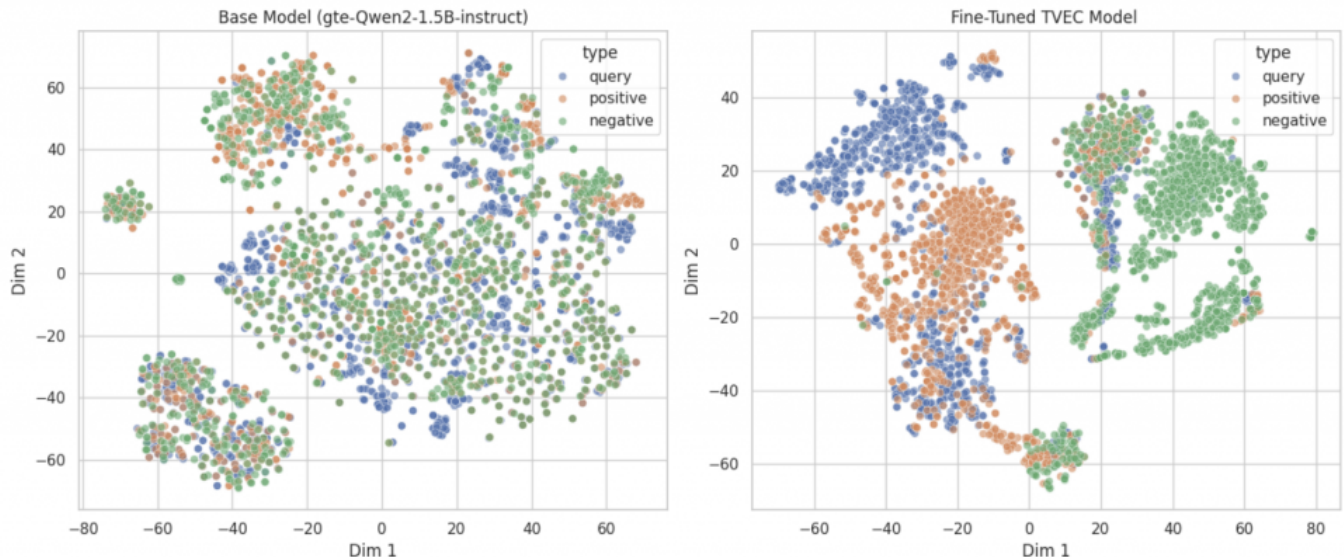


Fig. 3. t-SNE visualization of telecom embeddings. Blue: Queries, Orange: Positives, Green: Negatives. Left: Base Model shows poor separation. Right: T-VEC shows clear separation and clustering, indicating improved semantic structure.

City of Dallas, Texas May 2, 2025 ([IssueWire.com](https://www.issuewire.com)) - [NetoAI](https://www.issuewire.com), an AI company specializing in solutions for the telecommunications industry, today announced the release of Industry's First Telecom Vectorization Model (T-VEC), a groundbreaking text embedding model specifically engineered to understand the complex language of telecommunications. Available open-source, T-VEC overcomes the significant limitations of generic AI models, enabling dramatically higher accuracy for AI applications within the telecom sector.

The telecommunications industry relies on highly specialized terminology, acronyms, and technical concepts that general-purpose AI models often misinterpret. This linguistic barrier has capped the performance of AI tools, particularly Retrieval-Augmented Generation (RAG) systems used for tasks like technical support and document analysis, at approximately 75% accuracy – insufficient for mission-critical applications.

T-VEC directly addresses this challenge. Developed through meticulous engineering, it incorporates a deep understanding of telecom semantics:

- **Domain-Specific Fine-Tuning:** T-VEC adapts the powerful gte-Qwen2-1.5B-instruct model using a curated dataset of over 100,000 telecom-specific data points.
- **Deep Parameter Adaptation:** Unlike superficial tuning, NetoAI modified weights across 338 layers of the base model, ensuring profound integration of domain knowledge.
- **Industry-First Telecom Tokenizer:** NetoAI also developed and open-sourced the first tokenizer specifically designed for telecom vocabulary, drastically improving how the model processes industry jargon.

The results demonstrate a paradigm shift in accuracy. While generic models struggle on telecom-specific benchmarks (scoring below 0.07 accuracy on NetoAI's internal triplet evaluation), T-VEC achieves an exceptional **0.9380 accuracy**. In practical RAG applications, this translates to performance improvements from the industry standard of ~75% accuracy to **88-93% accuracy** when using T-VEC.

"For too long, the unique language of telecom has been a roadblock for truly effective AI," said **Ravi Kumar Palepu**, CEO of NetoAI. "Generic models simply don't speak the language, limiting ROI and hindering innovation. T-VEC breaks down that barrier. By providing an AI that understands telecom deeply, we're enabling companies to finally deploy AI solutions with the accuracy and reliability needed for real-world impact, from enhancing customer experience to optimizing network operations."

"Building T-VEC required more than just data; it required deep architectural adaptation," added **Vignesh Ethiraj**, CTO of NetoAI. "Modifying hundreds of layers and creating a bespoke tokenizer ensures T-VEC doesn't just recognize keywords, but understands context and nuance. By open-sourcing T-VEC under an MIT license, we aim to empower the entire industry to build more sophisticated and effective AI applications."

T-VEC is poised to accelerate AI adoption across various telecom use cases, including:

- Intelligent Network Monitoring and Fault Prediction
- Automated Customer Support and Troubleshooting
- Semantic Search across Technical Documentation and Standards
- Compliance and Regulatory Analysis

Availability:

The T-VEC model and the telecom-specific tokenizer are available now under the MIT license on Hugging Face: <https://huggingface.co/NetoAISolutions/T-VEC>

Technical details and full benchmark results can be found in the research paper on arXiv: <https://arxiv.org/abs/2404.16460>

About NetoAI:

NetoAI is an artificial intelligence company dedicated to developing cutting-edge AI products and solutions tailored specifically for the telecommunications industry. By combining deep domain expertise with advanced AI techniques, NetoAI empowers telecom companies to enhance efficiency, improve customer experiences, and drive innovation.

<https://netoai.ai/>

TABLE II
ESTIMATED AVERAGE MTEB SCORES (HIGHER IS BETTER)

Model Name	Estimated Average Score
T-VEC	0.825
bge-base-en-v1.5	0.815
gte-base	0.805
gte-Qwen2-1.5B-instruct	0.795
instructor-xl	0.785
e5-base-v2	0.780
jina-embeddings-v2-base-cn	0.775
all-mpnet-base-v2	0.770
multilingual-e5-base	0.765
all-MiniLM-L6-v2	0.760

TABLE IV
TELECOM-SPECIFIC TRIPLET EVALUATION SCORE (HIGHER INDICATES BETTER SEMANTIC SEPARATION)

Model Name	Avg Telecom Triplet Score
T-VEC	0.9380
gte-Qwen2-1.5B-instruct	0.0135
all-MiniLM-L6-v2	0.0637
all-mpnet-base-v2	0.0685
bge-base-en-v1.5	0.0414
e5-base-v2	0.0168
jina-embeddings-v2-base-cn	0.0290
instructor-xl	0.0321
gte-base	0.0169
multilingual-e5-base	0.0120

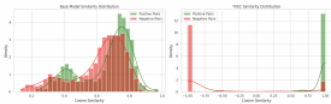


Fig. 2. Cosine similarity distribution for positive (green) and negative (red) telecom pairs. Left: Base Model (gte-Qwen2-1.5B-instruct). Right: Fine-tuned T-VEC model. T-VEC shows vastly improved separation.



Media Contact

NetoAI

*****@netoai.ai

Source : NetoAI Solutions Limited

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