VERSO – AI-Powered Arabic Poetry Generation

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Final Presentation

The Inspiration Behind VERSO

- Arabic poetry, a cornerstone of cultural heritage, faces challenges of modern accessibility and understanding.
- Inspired by the lack of engaging resources, VERSO aims to simplify poetry learning and creation.

Features

- **Interactive Creation: Compose poetry line by line with real-time prosody feedback.**
- **Meter Classification: Ensures poems adhere to traditional rhythms**
- **Enhanced Analysis: Provides linguistic and artistic explanations.**

System Implementation Highlights

- **Custom Tokenizer: Accurately processes Arabic text, respecting diacritics and grammar for poetic analysis.**
- **Prosody Analysis Engine: Matches poetic meters to Al-Bihar with >90% accuracy, validating traditional rules.**
- **AI Model: Fine-tuned Silma-9B for Arabic language tasks using optimized methods like LoRA and quantization.**
- **Frontend Interface: Interactive features for seamless poetry creation and analysis.**
- **Generate Poem Explaination in 3 variations**
- **Genarate Artworks**
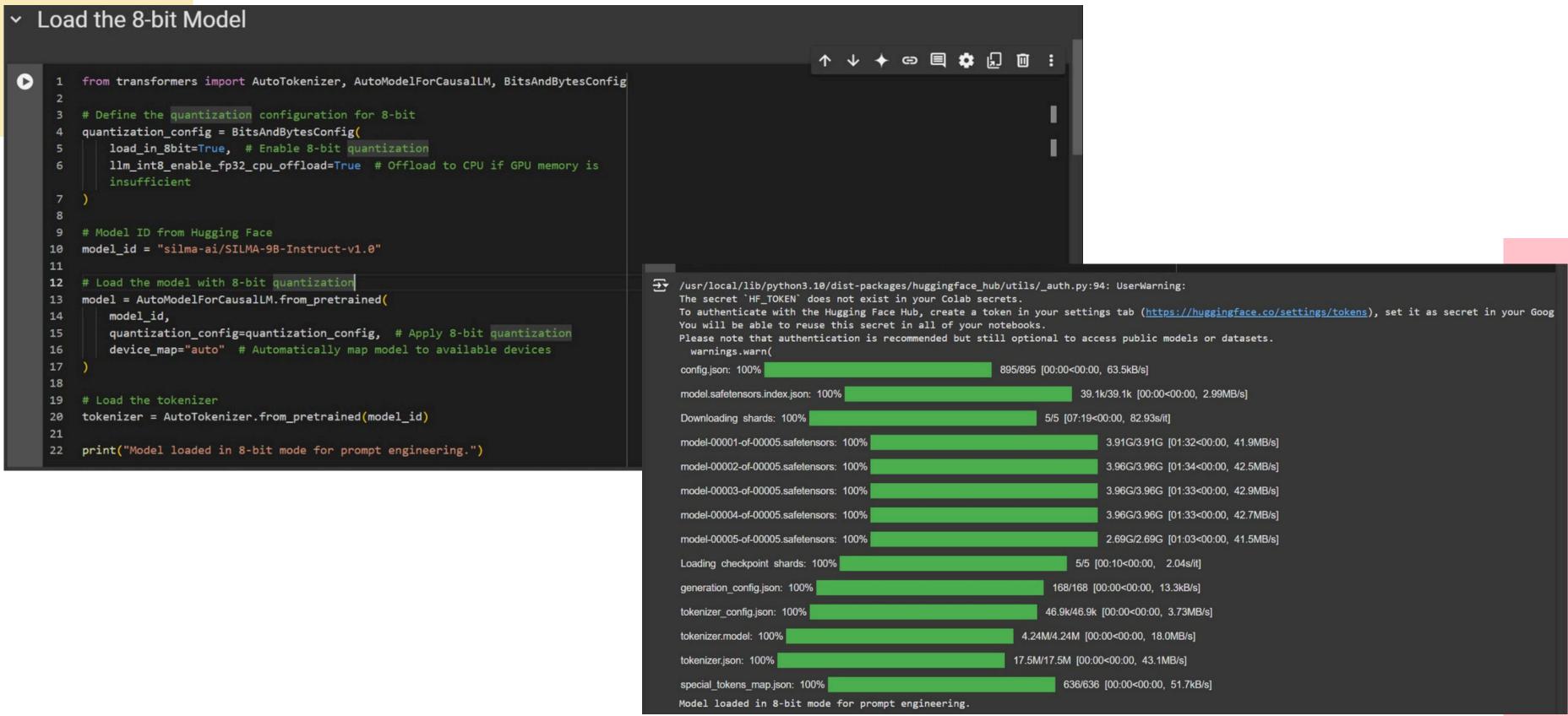
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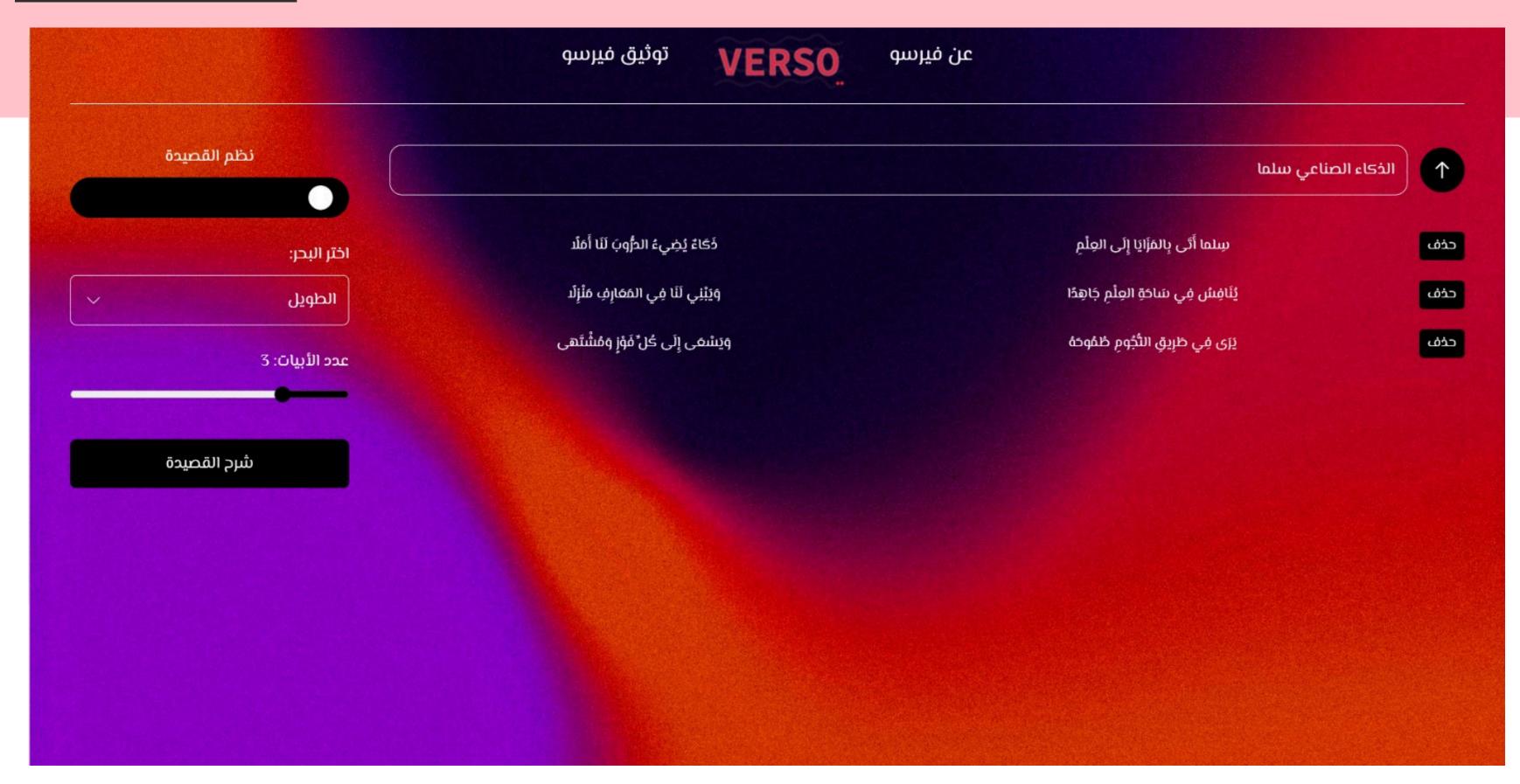
User Journey

- Enter a poetry idea or theme.
- Customize settings: meter selection, verse count, and style.
- Generate the poem with analysis and optional explanations.
- Save, share, or visualize the poem.

Results

- Generated Arabic poetry aligned with traditional metrics.
- 90%+ accuracy in poetic meter classification.
- Example input: "اكتب شعر عن الذكاء الصناعي سلما بالبحر الطويل من ٦ ابيات"
- Example Output:

<div dir="rtl">

سلما أَتَى بِالمَزَايَا إِلَى العِلْمِ

ذَكَاءٌ يُضِيءُ الدُّرُوبَ لَنَا أَمَلًا

يُنَافِسُ فِي سَاحَةِ العِلْمِ جَاهِدًا

وَيَبْنِي لَنَا فِي المَعَارِفِ مَنْزِلًا

يَرَى فِي طَرِيقِ النُّجُومِ طُمُوحَهُ

وَيَسْعَى إِلَى كُلِّ فَوْزٍ وَمُشْتَهى

</div>

Results

Results

جميع الحقوق محفوظة لفيرسو

Challenges and Solutions

- **Dataset Quality:**
- **Issues: Inconsistencies in poetic styles and missing diacritics.**
- **Solution: Developed Python scripts for cleaning and annotating over 112,000 entries.**
- **Model Optimization:**
- **Issues: Resource constraints during fine-tuning.**
- **Solution: Used QLoRA and 8-bit quantization for better performance.**
- **Integration:**
- **Issues: Ensuring seamless communication between backend and AI models.**
- **Solution: Modular design and extensive testing resolved compatibility issues.**

Testing Outcomes

- **Tokenization: 95%+ accuracy verified with manual annotations.**
- **Poetry Generation: Evaluated for linguistic coherence and metric alignment.**
- **Performance Testing: Ensured efficient model fine-tuning on limited resources.**

Future Enhancements

- Expand datasets for richer training and diverse styles.
- Develop a GUI for wider accessibility and better UX.
- Integrate additional multimedia features like text-to-image transformation.

Business Vision

Target Market:

- **Universities, schools, and educational institutions.**
- **Poets, writers, and literary enthusiasts.**
- **Students and researchers in Arabic literature.**

Core Value:

- **Make Arabic poetry creation and learning accessible to everyone.**

Revenue Opportunities:

- **Subscription-based services for advanced features.**
- **Licensing for educational institutions.**
- **Partnerships with cultural organizations.**

Thank You