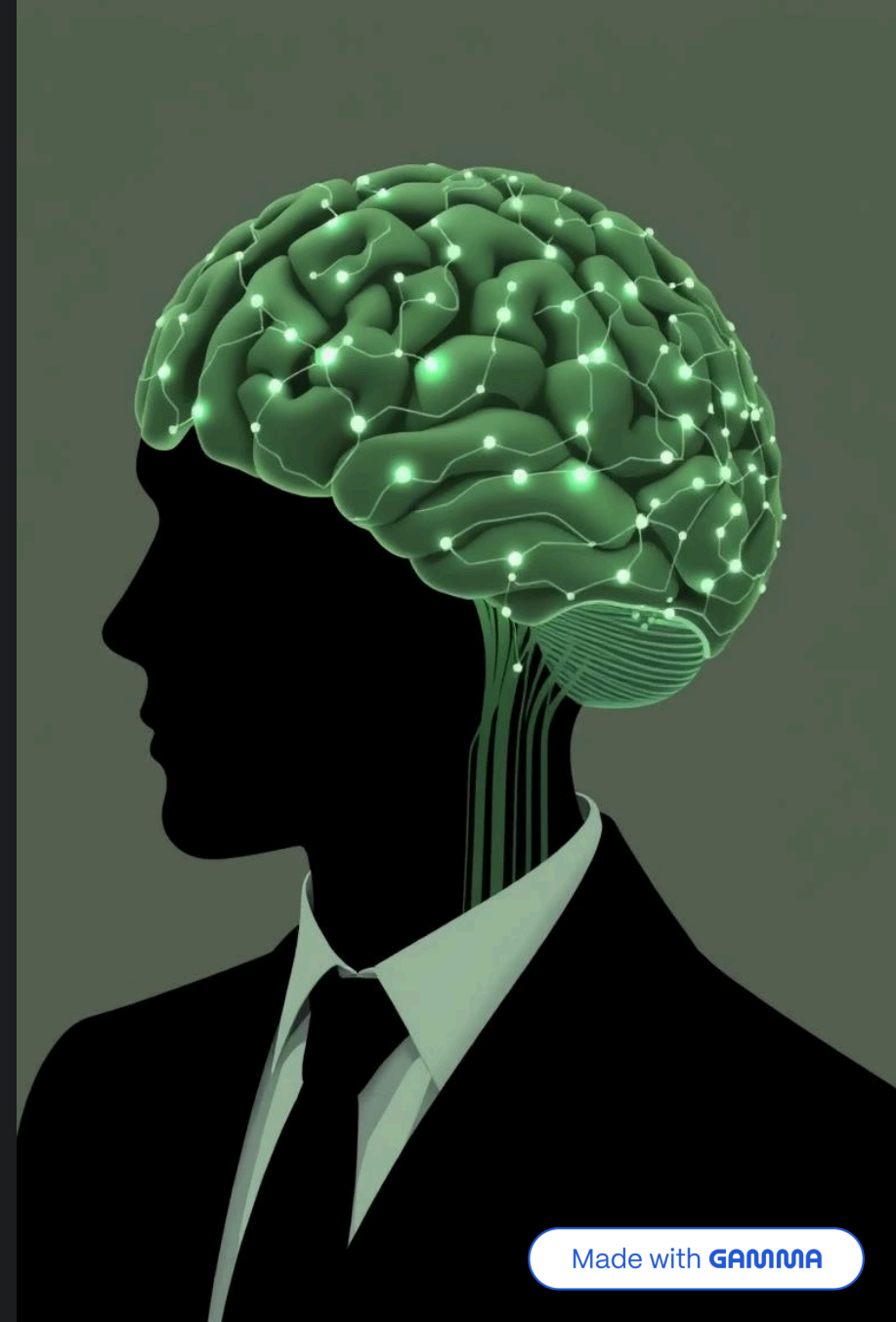


# Deep Mental: AI-Powered Mental Health Risk Detection

Analyzing Reddit Posts for Early Warning Signals

-By Anandkumar Shashikant Verma



# The Silent Epidemic

## Rising Mental Health Crisis

1 in 5 adults affected.  
Undetected distress.

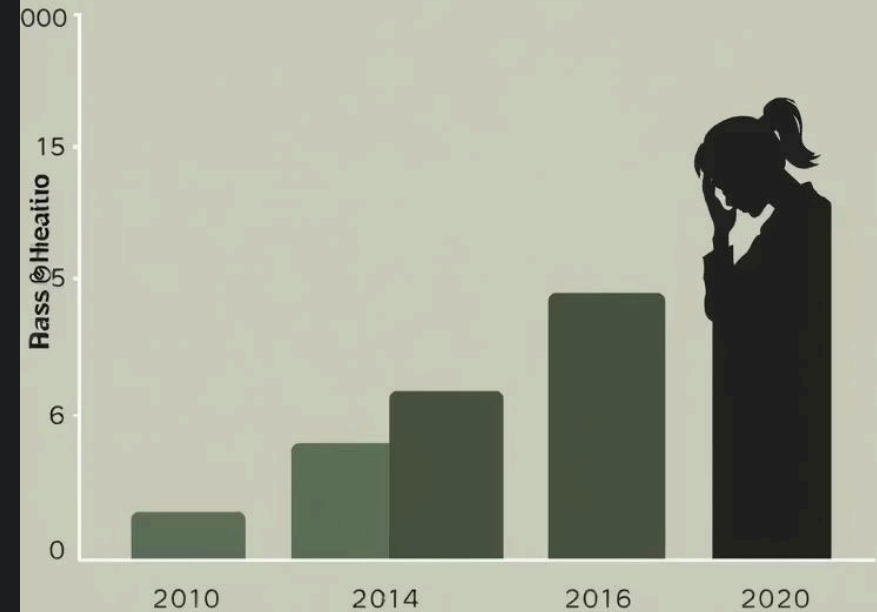
## Hidden Signals in Social Media

Uncovering distress signals in  
online posts.

## Automated Early Intervention

Our goal: Rapid, proactive support.

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Made with GAMMA

# Dataset & Risk Categories

CLPsych 2021 Reddit Dataset



**Suicidal Thoughts**



**Depressive Language**



**Anxiety Markers**



**Substance Use**

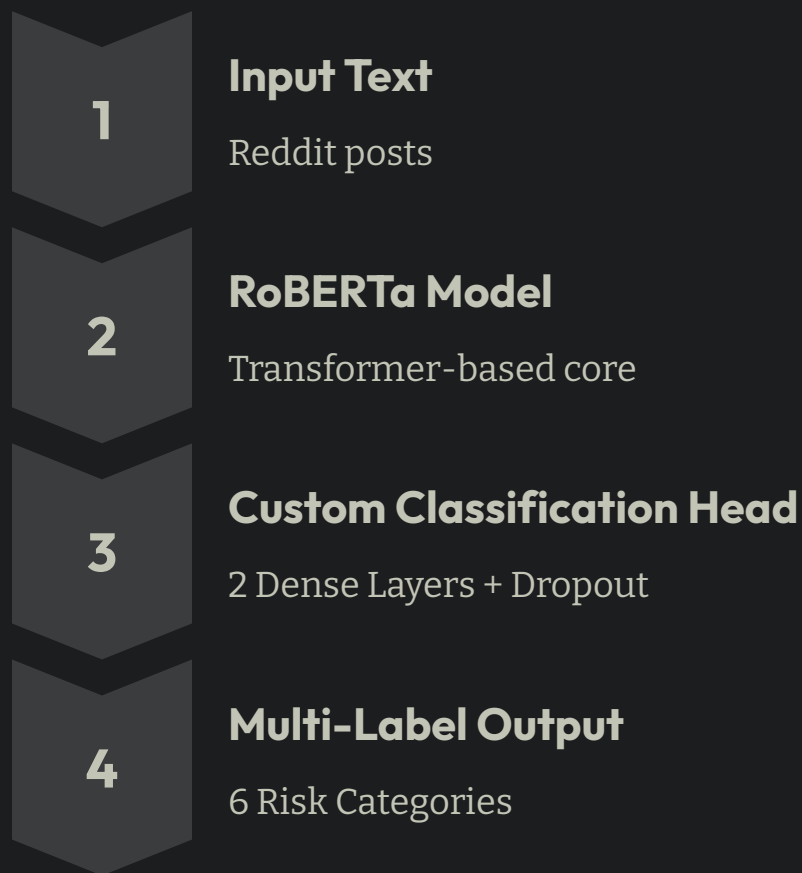


**Social Isolation**

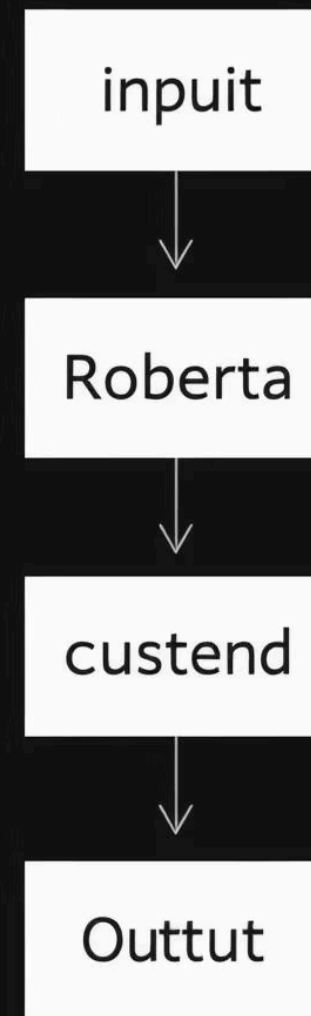


**Economic Stress**

# Model Architecture

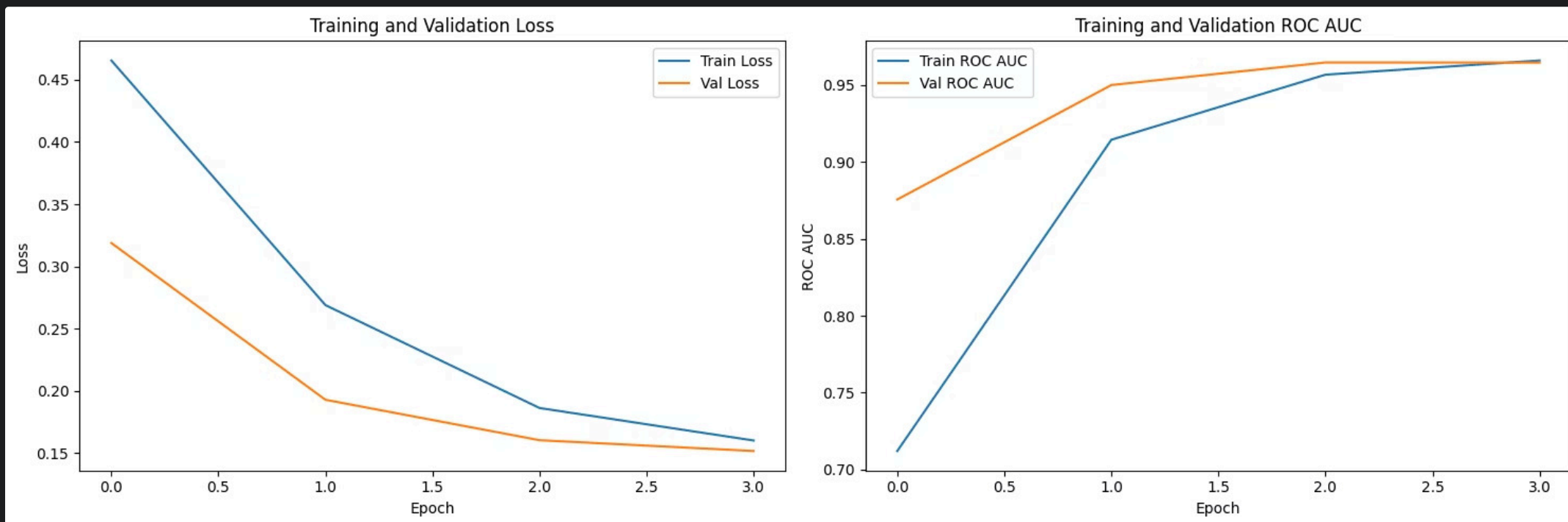


Optimized thresholds for precision.

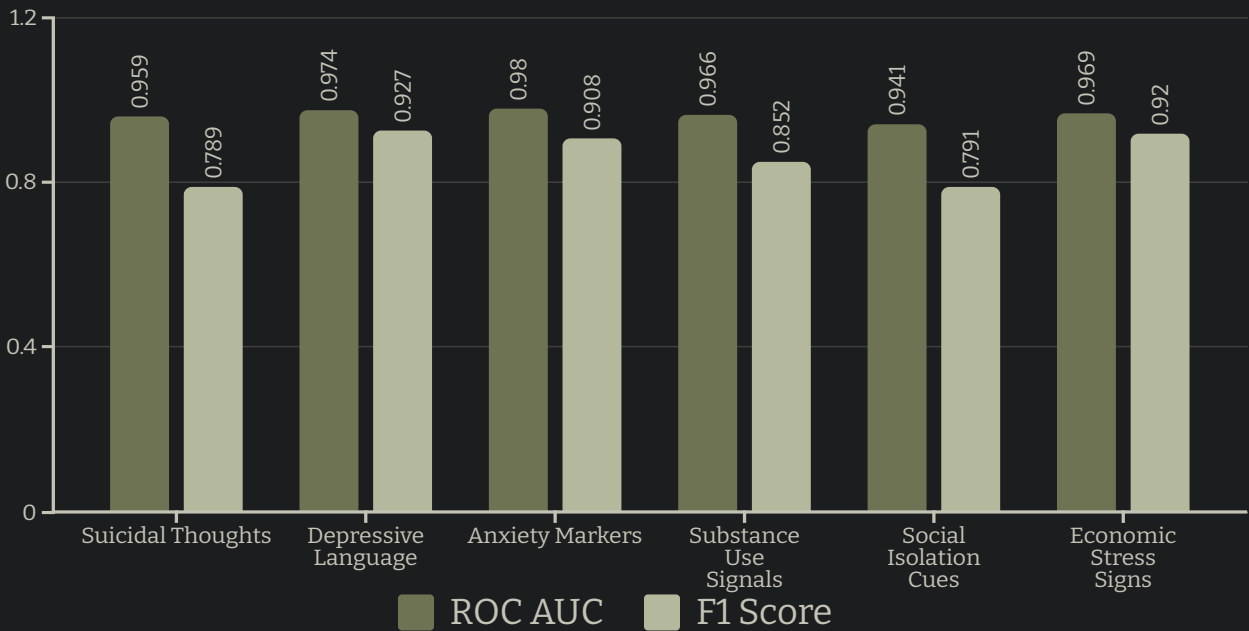


# Performance Metrics

- **Training Time:** ~3 hour on GPU



# Performance Metrics: Detailed Evaluation



Our model demonstrates strong performance across all mental health risk categories, with consistently high ROC AUC and F1 scores. Notably, **Depressive Language** and **Economic Stress Signs** achieved exceptional F1 scores, indicating high precision and recall in these critical areas.



# Live Prediction Demo

## Deep Mental: Mental Health Risk Detector

Analyzes Reddit-like posts for potential mental health risks and offers support suggestions.

User Text

Lost my job last month, bills are piling up.

Clear

Submit

Predicted Mental Health Risks

- ✗ Economic Stress Signs: 1.46%
- ✗ Social Isolation Cues: 0.36%
- ✗ Substance Use Signals: 1.05%
- ✗ Suicidal Thoughts: 1.88%
- ✗ Anxiety Markers: 1.17%
- ✓ Depressive Language: 97.88%

### Support Suggestions:

Depressive Language:  Journaling and CBT may help manage low mood.

Flag

☰ Examples

I feel like giving up. Nothing makes sense anymore.

I've been drinking every night just to sleep.

Lost my job last month, bills are piling up.

No one really talks to me anymore, I'm always alone.

I'm constantly panicking even when nothing is wrong.

I'm grateful today — had a really good therapy session.

# Challenges & Solutions

Challenge	Solution
Class Imbalance	Threshold Optimization
Model Overfitting	Dropout + Early Stopping
Long Texts	Truncation (256 tokens)





# Impact & Future Work

## Current Applications

- Crisis hotline prioritization
- Large-scale mental health research

## Next Steps

- Real-time API deployment
- Expand risk categories (Self-harm, PTSD)

The background of the slide features a network of interconnected nodes and lines, resembling a molecular structure or a digital network. In the foreground, there are silhouettes of several people, including a man in profile on the left and a woman on the right, suggesting a group of professionals or a community. The overall color scheme is dark with light-colored text and network elements.

# Empowering Connection

Deep Mental harnesses AI to provide early warning signals, transforming reactive care into proactive support. Together, we can build a future where no one suffers in silence.