💬 Your On-Site Guide: The Emotion Modeling Chatbot

This chatbot is here to help you **navigate the paper and the website's visualizations**. It's a helpful assistant that can answer many of the questions you might have while exploring the research.

🧠 What the Chatbot *Can* Do:

📄 Answer Questions About the Paper

- Responds to questions about the study's goals, methods, results, and conclusions
- Can explain key concepts from the paper in simpler terms
- Helps clarify terminology, variables, and analytic approaches

📊 Explain Website Figures

- Offers descriptions of the different interactive visualizations
- Helps you understand what each figure shows (e.g., model performance, feature importance, individual-level predictions)
- Can guide you in interpreting metrics like R^2, SHAP values, and model comparisons

🧭 Recommended Workflow for Using the Website

Step 1: Start Broad – Compare Overall Model Performance

📍 Page: Model Performance Analysis (Violin Plots)

- Explore how different ML models (e.g., Elastic Net vs. Random Forest) perform across participants.
- Try different combinations of:
  - NLP approaches (GPT, LIWC, LDA, COMBINED)
  - Modeling frameworks (Idiographic vs. Nomothetic)
  - Outcomes (Negative Affect, Sad, Angry, Nervous)

Goal: Identify which models and NLP features perform best **overall**.

💬 *Chatbot Tip:* "Would you like to see how this performance varies per individual?"

Step 2: Go Deeper – Evaluate Participant-Level Performance

📍 **Page: Model Performance per Participant (Table View)**

- Look at the R^2, RMSE, and p-values for individual participants.
- Use filters to isolate participants with good or poor model fit.

Goal: Spot outliers, identify variation in prediction quality, and build hypotheses about individual differences.

Step 3: Visualize – See How Well Models Fit an Individual

📍 **Page: Individual Graph View (Time Series)**

- Plot actual vs. predicted emotion over time for specific participants.
- Compare different models or modeling approaches for the **same participant** side-by-side.

Goal: Understand model fit visually, detect moments of misalignment, and explore temporal patterns.

Step 4: Explain – Explore What Drives the Predictions

📍 **Page: SHAP Value Heatmap (Multi-Participant)**

- Select several participants to see which features drive predictions across them.
- Use absolute/directional toggle to explore general importance vs. signed influence.

📍 **Page: SHAP Value per Participant (Bar Plot)**

- Zoom in on one participant to interpret which features most strongly contributed to their predicted scores.

Goal: Interpret the **"why"** behind the predictions. What language patterns are predictive, and in which direction?

Step 5: Compare – Understand What Makes Models Work (or Fail)

📍 Page: Feature Importance Group Comparison (High vs. Low R^2)

- See which features are more or less important in participants where the model performs well vs. poorly.
- Helps evaluate robustness and generalizability of features.

Goal: Diagnose **why** models succeed for some people but fail for others.

Step 6: Summarize & Compare – Discover Shared and Emotion-Specific Predictors

📍 Page: Common Top Predictive Features

- View the top features most frequently ranked as important across participants — shown separately for each outcome (Negative Affect, Sad, Angry, Nervous).
- See whether features tend to have **positive or negative predictive value** (via bar color).
- Adjust the number of top features per participant, total features shown, and SHAP thresholds.

Goals:

- ✅ Identify **common predictors** that consistently drive emotion predictions across participants.
- 🔍 Compare patterns across outcomes to assess **emotion specificity** of features.
  - For example: Are certain features like `Clout` or `StressLength` more strongly linked to general Negative Affect, or do they uniquely predict emotions like sadness or anger?
- 🎯 Determine whether text features are **broadly predictive** or **emotion-specific**, which has implications for personalized intervention and affective modeling.

🧠 Use Cases This Site Is Perfect For:

- Evaluating whether **idiographic models** outperform nomothetic ones for certain outcomes.
- Identifying **tailored intervention targets** (e.g., people who suppress might benefit from memory specificity training).
- Understanding how **specific text features** relate to emotion — both at individual and group levels.
- Validating model explanations using **SHAP-based interpretability**.