DCI Performance Analysis Project - Bluecoats Focus (Summary Report)

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Purpose: To analyze DCI (Drum Corps International) score data in order to uncover performance trends and support strategic insights for Bluecoats (my home corps), after marching with them in 2023.

Project Context

DCI scores evolve throughout a summer tour that begins with a month-long training camp in late May, followed by a competitive tour with performances judged across multiple captions: General Effect (GE), Visual, Music, etc. Scores culminate in a three-day DCI Championship event in August (Prelims, Semis, Finals). The project aims to identify trends and insights from this seasonal arc for the Bluecoats.

Key Objectives

- Track Bluecoats' total and caption-level score progression over time.
- Compare performance versus competitors (e.g., Blue Devils, Crown).
- Detect plateau phases, recovery periods, or judging inconsistencies.
- Forecast performance trends using time-series or dynamic modeling.
- Propose optimization-based recommendations for rehearsal prioritization.

Dynamic Forecasting Methods

Dynamic forecasting is well-suited for tracking score progression throughout the season. It supports regular updates as new show data comes in. Recommended models include Kalman Filters, Bayesian Updating, Holt-Winters, State Space Models, and Facebook Prophet. These models can account for uncertainty and adjust projections based on new data.

Visualization Ideas for Staff & Directors

- Line plots of caption scores across time (GE, Visual, Music, etc.)
- Heatmaps of score differentials by caption vs competitors
- Rolling average + trendline plots for performance momentum
- Radar charts of Finals-readiness by caption

- Judge consistency matrix to show scoring biases or trends

- Momentum bar plots showing improvement or plateau before major shows

Advanced Modeling Suggestions

- Time-Series Forecasting (ARIMA, Prophet, Holt-Winters, etc.)

- Clustering of shows by judging panel or location

- Optimization model: Allocate limited rehearsal time across captions for maximum projected gain