**To:** Hedge Fund Pricing Committee  
**From:** Quant Research Team  
**Subject:** TOP Prediction System Implementation

**1. Purpose**

Formally request approval for developing the TOP (The Optimal Pricing) prediction system to reduce pricing errors through Bayesian Model Averaging with attention mechanisms, targeting 15% improvement over traditional factor models.

**2. Business Case**

| **Metric** | **Current** | **Target** |
| --- | --- | --- |
| Avg Pricing Error | 12.3% | <8% |
| Factor Coverage | 5-10 factors | 118 factors |
| Regime Adaptability | Manual adjustment | Auto-detection |

**3. Key Features**

**Technical Innovation:**

* Bayesian spike-and-slab priors replacing flat priors
* Attention-weighted factor aggregation
* Microstructure-adjusted error bands

**4. Implementation Timeline**

| **Phase** | **Deliverable** | **Deadline** |
| --- | --- | --- |
| Alpha | Factor Library | MM/DD |
| Beta | Backtest Report | MM/DD |
| Prod | Trading API | MM/DD |

**5. Resource Requirements**

* **Data Costs:** $25k/yr (Bloomberg+Wind)
* **Compute:** 2 x GPU nodes (AWS p4d.24xlarge)
* **Validation:** Full market cycle backtest (2007-2023)

**6. Risk Mitigation**

* **Factor Decay:** Monthly re-estimation
* **Regime Shifts:** Volatility clustering detector
* **Execution Risk:** Phased rollout to 5% order flow