MVP Feature Specification

Product: Real-Time Multimodal Bias Detection System
Version: 1.0
Date: June 1, 2025
Owner: MK Management & Consulting LLC
Target Platforms: Zoom, Microsoft Teams (via integration)
Delivery Format: Web app (React) with API backend (FastAPI)

1. Objective

To launch a Minimum Viable Product (MVP) that detects and provides feedback on dominance behaviors, engagement levels, and early-stage biases in virtual meetings using voice, facial, and NLP analysis, with real-time dashboard alerts and post-meeting reports.

2. Core MVP Features

A. Meeting Integration:
Join Zoom or MS Teams as bot/user (Zoom, SDK, Graph API)
Capture video/audio in real-time
Transcribe speech (Whisper or Azure ASR)

B. Voice Analysis:
Speaker diarization
Detect interruptions
Tone classification
Speaking Time % per participant

C. Facial & Visual Analysis:
Eye contact detection
Engagement scoring
Micro expression detection
Nervous tics or fidget behavior

D. Text & NLP Analysis:
Sentiment of speech
Keyword extraction
Early language bias flags (optional) (e.g. "always", "they all")

E. Bias Detection & Behavioral Triggers:
Speaking Time Dominance
Interruptions
Tone Misalignment
Lack of Eye Contact
Emotional Microexpression Flags

F. Real-Time Dashboard: Define how metrics are updated and displayed.
Live metrics per participant
Alerts: Dominance, Engagement drop, Interruptions
Nudge system (lightweight/other behavioral prompts)

G. Post-Meeting Summary:
Individual speaking + engagement summary
Bias flagging report
Team communication heatmap

3. MVP Metrics Output

Metric	Format	Use Case
Speaking Time %	Bar Graph	Meeting equity visualization
Interruptions Count	Number	Conflict or overlap insight
Emotional Tone Timeline	Line Chart	Flow of mood during meeting
Engagement Score	% Scale	Attention/performance tracking
Dominance Alert	Trigger	Power imbalance flag
Eye Contact Ratio	% per user	Attention/bias indicator

4. Personality Profile (Optional in MVP)
Basic Big Five slider input (future/user-submitted)
Optional trait-adjusted thresholds for alerts

5. Out of Scope (Future Phases)
Deep NLP-based bias profiling
Inference of full Big Five from voice/text
Multi-language support
Smart coaching module

6. Technical Stack – Draft for input

Layer	Stack
Frontend	React.js + Tailwind + WebSocket
Backend API	FastAPI + Redis + Celery
Audio Processing	Whisper, pyannote-audio
Video Processing	MediaPipe, Dlib, OpenFace
NLP	OpenAI API + spaCy
Storage	Supabase/PostgreSQL
Auth & Privacy	OAuth2, JWT, Consent Gateway

7. Acceptance Criteria

Feature	Criteria
Join Meeting	Must join as a bot and capture stream
Real-Time Feedback Engine	Must detect & surface top 5 cues in <3 sec delay. Measurable KPI's for performance.
Dashboard	Updates must reflect real-time status of users
Post-Meeting Reports	Must generate per-user and team summaries
Data Privacy	Must log only consented users, encrypted at rest

8. Data Privacy Requirements

Only opt-in users monitored
Anonymized data for team trends
All models auditable and versioned
Meeting data storage (configurable)

9. Timeline

Phase / Target Date

MVP Frontend v1 /
Audio + Video Sync /
Bias Detection Core/
Dashboard Beta /