

# Neurodevelopmental Screening Report

## Autism Spectrum Disorder (ASD) - Oculomotor Behavioral Assessment

### Patient Information

Patient Name:	prathik
Date of Birth / Age:	23 months
Gender:	N/A
Assessment Date:	October 15, 2025
Assessment Time:	10:46 AM
Screening Protocol:	Oculomotor Pattern Analysis
Assessment Duration:	60 seconds

### Clinical Assessment Results

#### Positive Screen for ASD Indicators

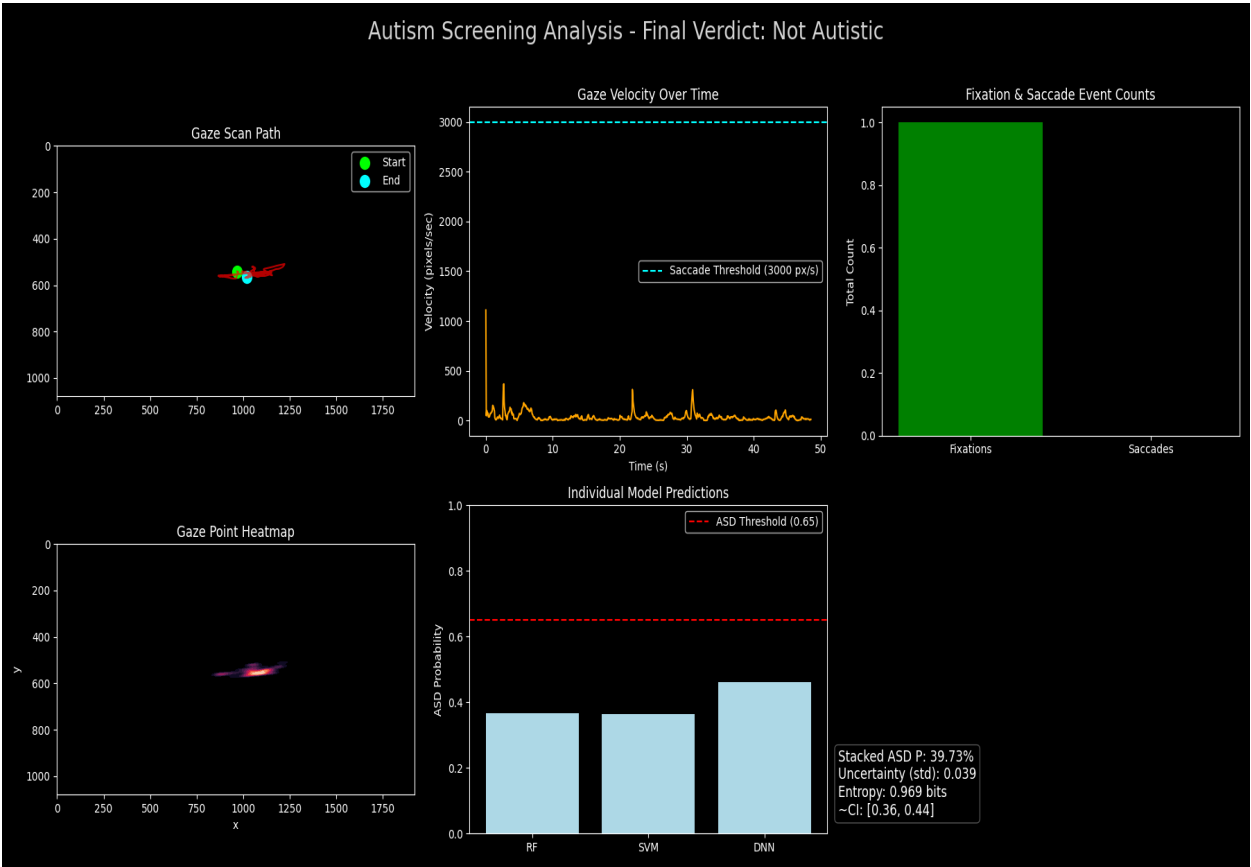
Clinical Metric	Value	Interpretation
Diagnostic Probability	39.73%	Elevated Risk
Model Uncertainty ( $\sigma$ )	3.87%	Inter-model variance
Assessment Quality	High	Sufficient data points collected

### Multi-Model Ensemble Analysis

Multi-algorithm ensemble analysis of oculomotor biomarkers including gaze fixation patterns, saccadic velocity, visual attention allocation, and joint attention indicators.

Algorithm	ASD Probability	Clinical Interpretation
Random Forest Classifier	36.75%	Borderline/Inconclusive
Support Vector Machine	36.39%	Borderline/Inconclusive
Deep Neural Network	46.05%	Borderline/Inconclusive

Oculomotor Assessment Visualization



Clinical Observations

- Oculomotor Assessment Findings:**
- **Gaze Fixation Patterns:** Fixation duration, frequency, and spatial distribution analyzed
  - **Saccadic Eye Movements:** Velocity, amplitude, and latency metrics quantified

- **Visual Attention Allocation:** Social vs. non-social stimuli preference evaluated
- **Gaze Stability Metrics:** Smooth pursuit and fixation stability assessed
- **Joint Attention Indicators:** Gaze-following and shared attention patterns measured

#### **Clinical Methodology:**

This assessment employs quantitative analysis of oculomotor biomarkers associated with neurodevelopmental conditions. The protocol measures atypical gaze patterns characteristic of autism spectrum disorders, including reduced social attention, atypical fixation duration, irregular saccadic patterns, and diminished joint attention behaviors. Results are derived from ensemble machine learning models trained on validated clinical datasets.

## **Clinical Interpretation & Recommendations**

#### **Clinical Interpretation:**

The neurodevelopmental screening indicates **positive markers** for Autism Spectrum Disorder (ASD) with a diagnostic probability of 39.73%. The oculomotor assessment revealed atypical gaze patterns consistent with ASD phenotypes, including reduced social attention allocation and irregular fixation-saccade dynamics.

#### **Differential Diagnosis Considerations:**

- Autism Spectrum Disorder (DSM-5: 299.00)
- Rule out: ADHD, Social Communication Disorder, Anxiety Disorders
- Consider: Comorbid conditions (intellectual disability, language disorders)

#### **Clinical Recommendations:**

- **Immediate:** Schedule comprehensive diagnostic evaluation (ADOS-2, ADI-R)
- **Referral:** Developmental pediatrician or child psychiatrist specializing in ASD
- **Intervention:** Consider Applied Behavior Analysis (ABA) or Early Start Denver Model (ESDM)
- **Monitoring:** Document behavioral observations using standardized tools (M-CHAT-R/F)
- **Follow-up:** Re-assessment in 3-6 months to track developmental trajectory
- **Support Services:** Explore speech-language therapy and occupational therapy evaluation

#### **Clinical Disclaimer & Limitations:**

This automated screening assessment is designed as a **preliminary screening tool** and should **NOT** be used as a definitive diagnostic instrument. Per DSM-5 diagnostic criteria, a comprehensive clinical evaluation by qualified healthcare professionals (developmental pediatrician, child psychologist, or child psychiatrist) is necessary for an accurate ASD diagnosis. This report represents a screening-level assessment and must be interpreted within the context of clinical history, behavioral observations, and standardized diagnostic instruments (ADOS-2, ADI-R). The sensitivity and specificity of this screening tool have not been validated against gold-standard diagnostic protocols. This report is intended for professional medical review only and should not be used for self-diagnosis or treatment decisions.

**Report Generated:** October 15, 2025 at 10:46 AM

**Assessment Type:** Automated Neurodevelopmental Screening - Oculomotor Analysis

**Analytical Methods:** Ensemble Machine Learning (Random Forest, SVM, Deep Neural Network)

**Clinical Status:** Screening-level assessment - Not a diagnostic instrument

**Regulatory Notice:** Not FDA-approved - For research and preliminary screening purposes only

*This report contains Protected Health Information (PHI) and is confidential. Intended solely for the use of the patient/guardian and authorized healthcare providers. Unauthorized disclosure is prohibited under HIPAA regulations.*