MICHIGAN STATE UNIVERSITY

Alpha Presentation

Smart Dashboard Monitoring Platform

The Capstone Experience

Team Amazon

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From Students…
…to Professionals

Project Overview

Problem: Engineering teams spend 80-120 minutes reviewing CloudWatch dashboards during standups, searching for latency spikes, faults, errors, and failures.

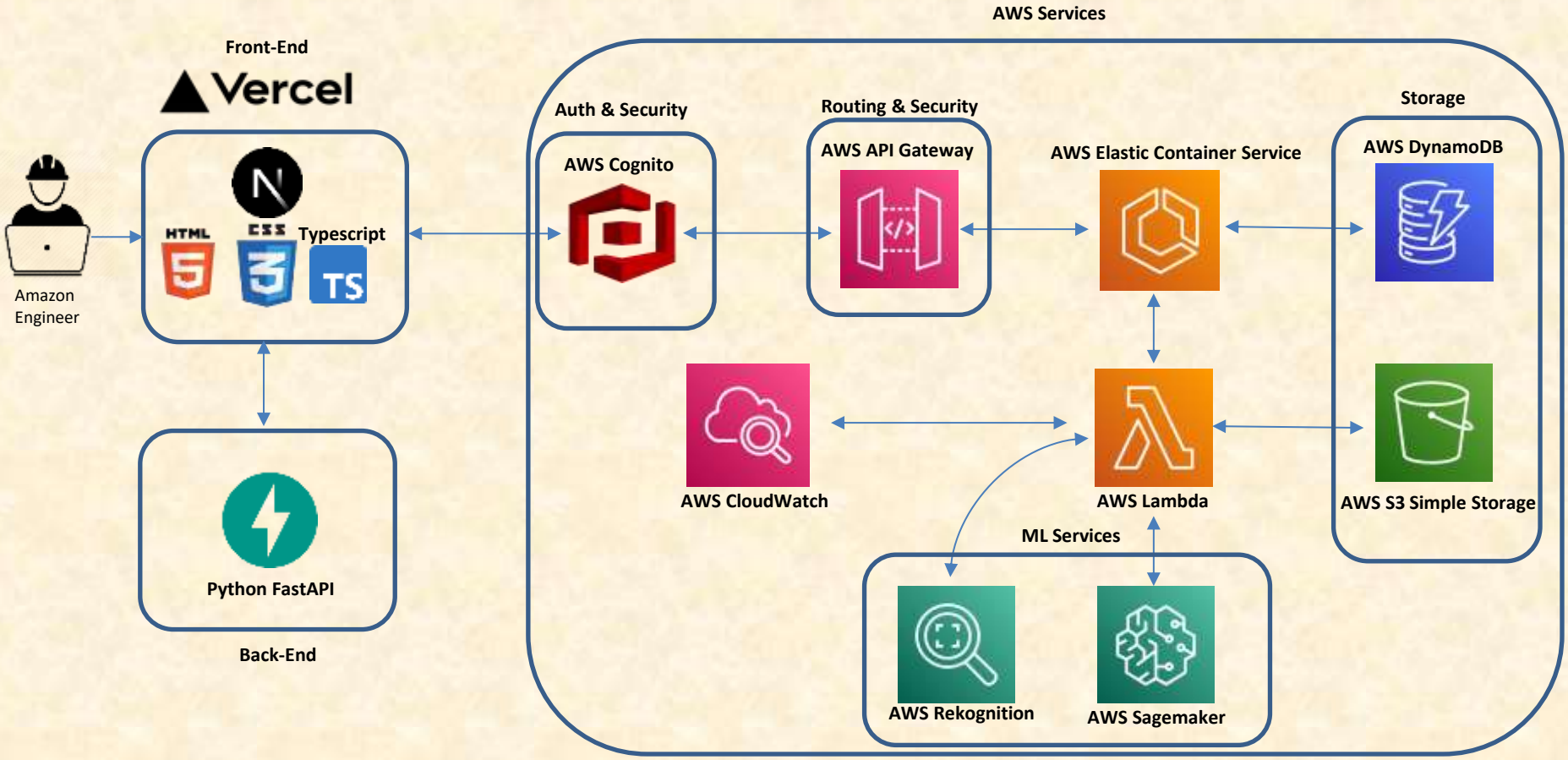
Solution: AI and ML powered monitoring platform that analyzes:

- Dashboard screenshots
- Raw metric data (CSV, JSON)
- Automatic CloudWatch ingestion

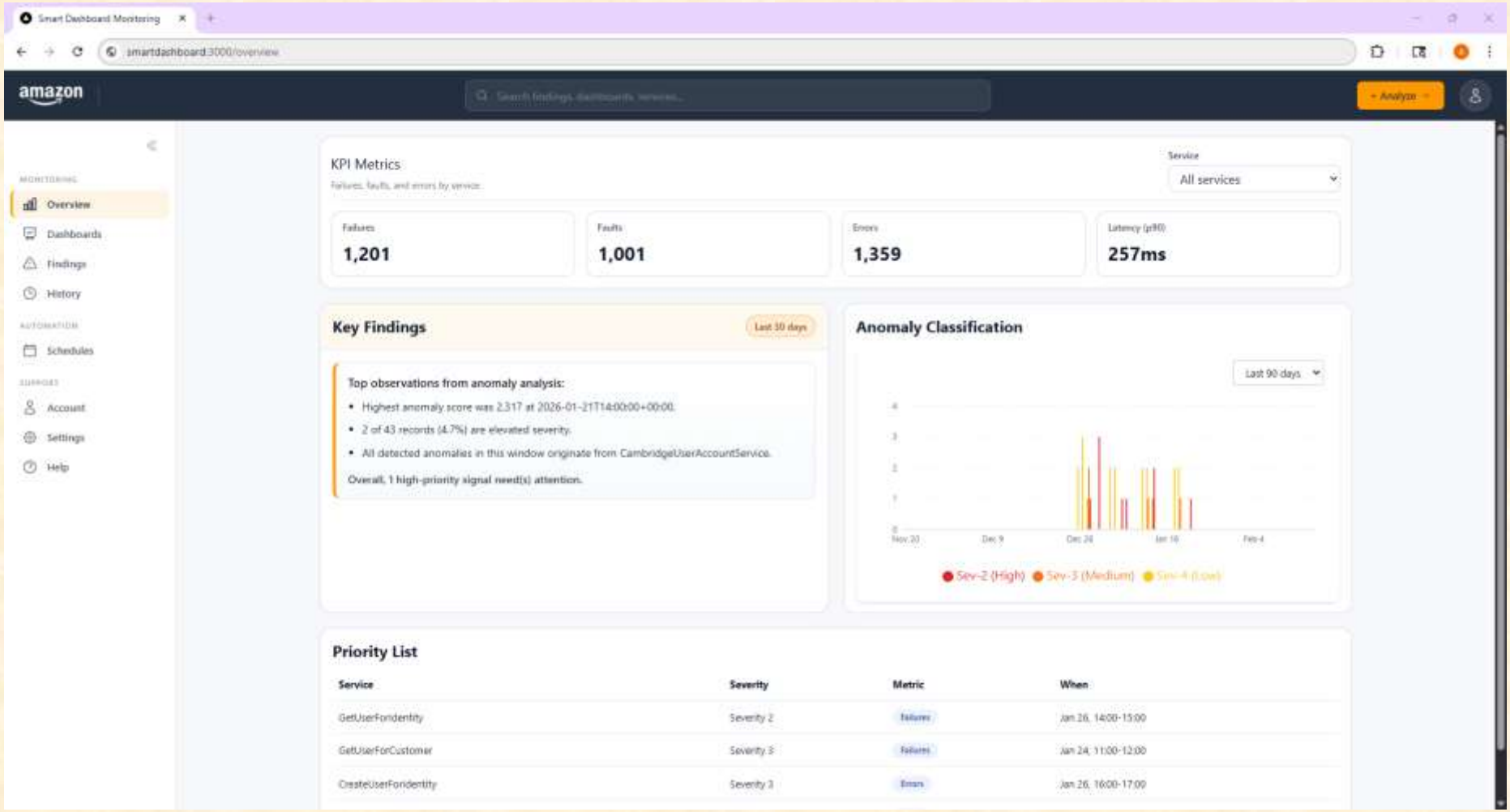
Detection Impact:

- Continuous vs 10-15 minute manual review
- Improved anomaly detection recall ~15-40%
- Historical pattern tracking

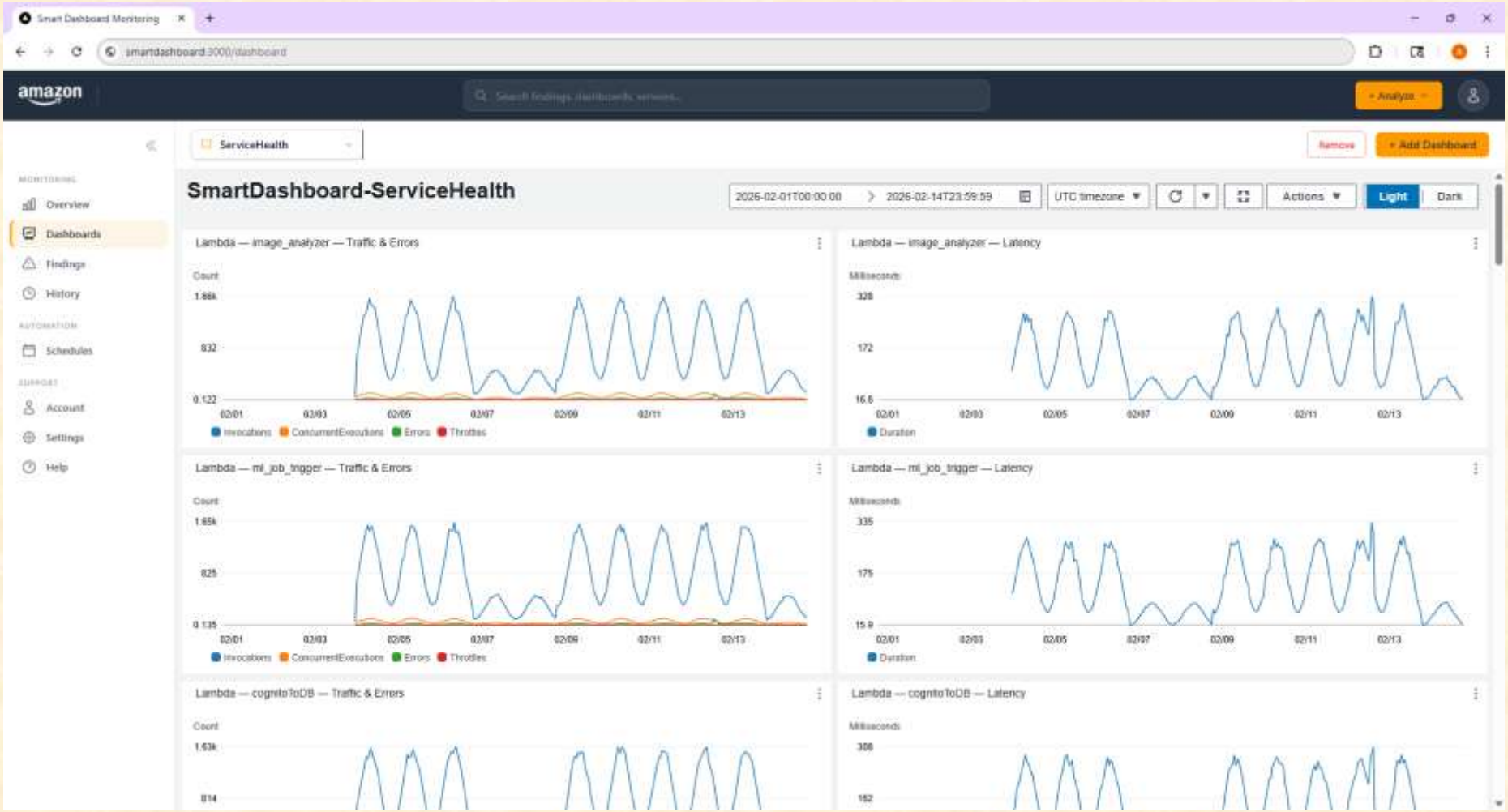
System Architecture



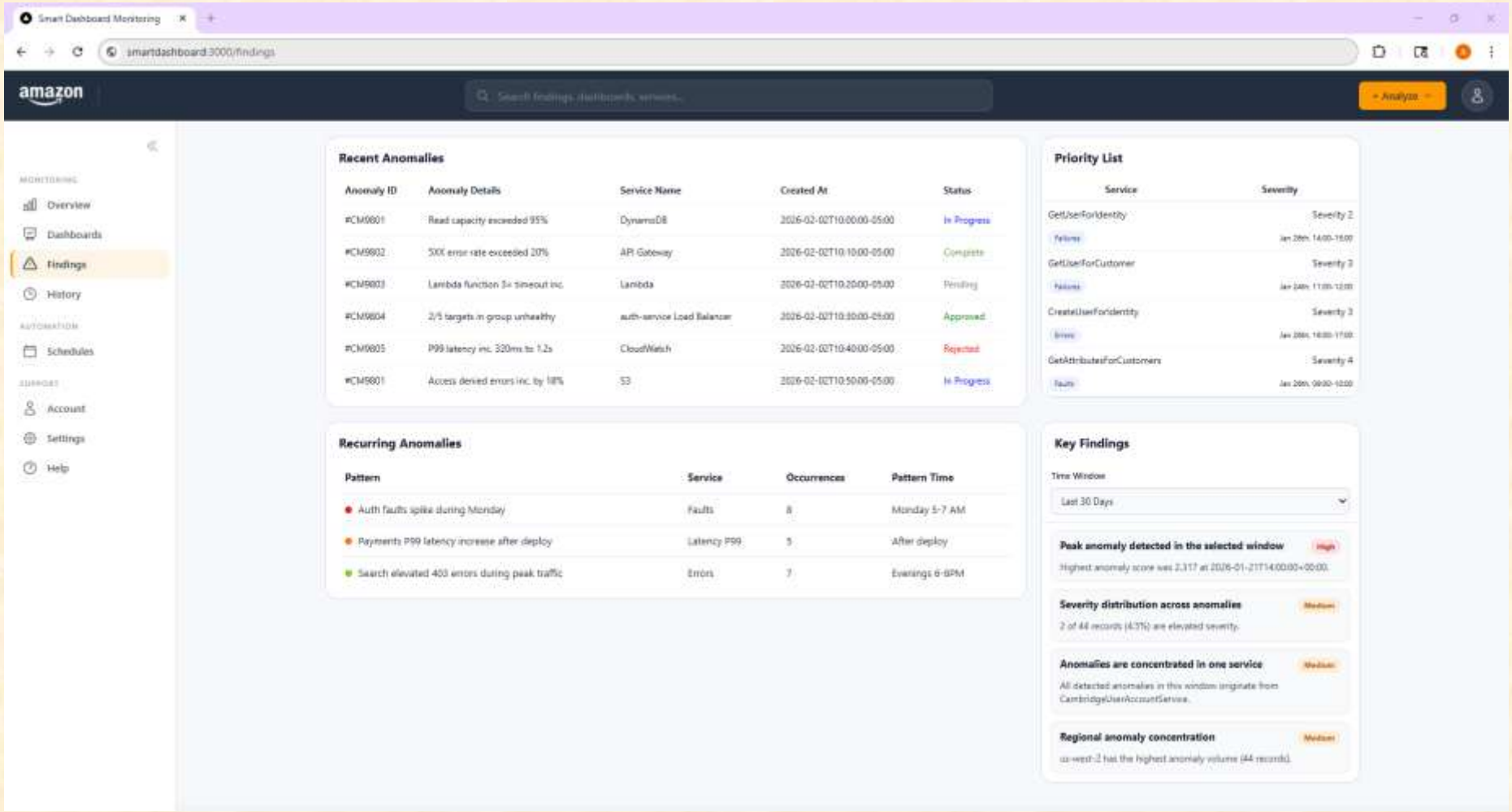
Overview


Smart Dashboard Monitoring
smartdashboard:3000/overview
amazon
+ Analyze
Overview
Dashboards
Findings
History
Schedules
Account
Settings
Help
KPI Metrics
Service
All services
Failures
1,201
Faults
1,001
Errors
1,359
Latency (p90)
257ms
Key Findings
Last 30 days
Top observations from anomaly analysis:
Highest anomaly score was 2.317 at 2026-01-21T14:00:00+00:00.
2 of 43 records (4.7%) are elevated severity.
All detected anomalies in this window originate from CambridgeUserAccountService.
Overall, 1 high-priority signal need(s) attention.
Anomaly Classification
Last 90 days
Nov 20
Dec 9
Dec 28
Jan 16
Feb 4
Sev-2 (High)
Sev-3 (Medium)
Priority List
Service
Severity
Metric
When
GetUserForidentity
Severity 2
Failures
Jan 26, 14:00-15:00
GetUserForCustomer
Severity 3
Failures
Jan 24, 11:00-12:00
CreateUserForIdentity
Severity 3
Errors
Jan 26, 16:00-17:00

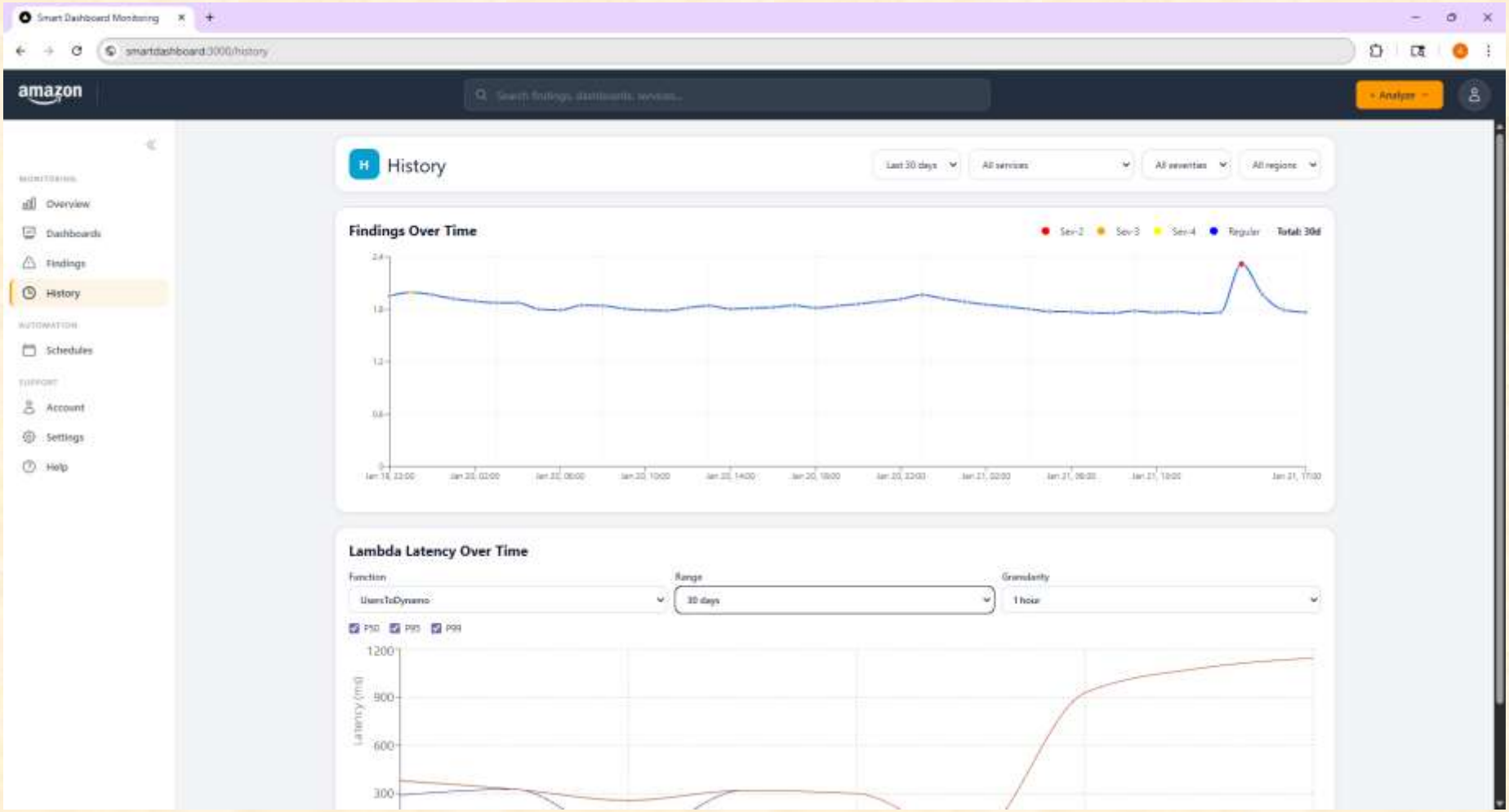
Dashboards


Smart Dashboard Monitoring
smartdashboard:3000/dashboard
amazon
+ Analyze
ServiceHealth
Remove
+ Add Dashboard
MONITORING
Overview
Dashboards
Findings
History
AUTOMATION
Schedules
SUPPORT
Account
Settings
Help
SmartDashboard-ServiceHealth
2026-02-01T00:00:00
2026-02-14T23:59:59
UTC timezone
Actions
Light
Dark
Lambda — image_analyzer — Traffic & Errors
Count
1.66k
832
0.122
02/01
02/03
02/05
02/07
02/09
02/11
02/13
Invocations
ConcurrentExecutions
Errors
Throttles
Lambda — image_analyzer — Latency
Milliseconds
328
172
16.6
Duration
Lambda — mi_job_trigger — Traffic & Errors
1.65k
825
0.135
Lambda — mi_job_trigger — Latency
335
175
15.9
Lambda — cognitoToDB — Traffic & Errors
1.63k
814
Lambda — cognitoToDB — Latency
326
162

Findings


Smart Dashboard Monitoring
smartdashboard:3000/findings
amazon
+ Analyze
Overview
Dashboards
Findings
History
Schedules
Account
Settings
Help
Recent Anomalies
Anomaly ID
Anomaly Details
Service Name
Created At
Status
#CM9801
Read capacity exceeded 95%
DynamoDB
2026-02-02T10:00:00-05:00
In Progress
#CM9802
5XX error rate exceeded 20%
API Gateway
2026-02-02T10:10:00-05:00
Complete
#CM9803
Lambda function 3× timeout inc.
Lambda
2026-02-02T10:20:00-05:00
Pending
#CM9804
2/5 targets in group unhealthy
auth-service Load Balancer
2026-02-02T10:30:00-05:00
Approved
#CM9805
P99 latency inc. 320ms to 1.2s
CloudWatch
2026-02-02T10:40:00-05:00
Rejected
#CM9801
Access denied errors inc. by 18%
S3
2026-02-02T10:50:00-05:00
In Progress
Priority List
Service
Severity
GetUserForIdentity
Severity 2
GetUserForCustomer
Severity 3
CreateUserForIdentity
Severity 3
GetAttributesForCustomers
Severity 4
Recurring Anomalies
Pattern
Service
Occurrences
Pattern Time
Auth faults spike during Monday
Faults
8
Monday 5-7 AM
Payments P99 latency increase after deploy
Latency P99
5
After deploy
Search elevated 400 errors during peak traffic
Errors
7
Evenings 6-8PM
Key Findings
Time Window
Last 30 Days
Peak anomaly detected in the selected window
Severity distribution across anomalies
Anomalies are concentrated in one service
Regional anomaly concentration

History


Smart Dashboard Monitoring
smartdashboard:3000/history
amazon
Analyze
Overview
Dashboards
Findings
History
Schedules
Account
Settings
Help
History
Findings Over Time
Lambda Latency Over Time
Function
Range
Granularity
30 days
1 hour
Latency (ms)
1200
900
600
300

What's left to do?

- Schedule metric ingestion and analysis
- Hosting on Vercel and migrating to the latest ECS version
- Migrate to new AWS account and setup infrastructure as code
- Analysis pipeline for manual uploads
- Refine feature engineering methods for ML model

Questions?

