

# **SET-TOP BOX REGRESSION TESTING**

Team Silver Redux

# THE PROJECT

- Phase 2: STB Regression Testing Framework
  - Layered Test Setup
    - Setup baseline screenshots and masks
    - Add Remote control commands
  - Run Tests
    - Run script on multiple STBs simultaneously
    - Uses Screenshot comparisons for test validation
  - Post-Test Analysis and Reporting
    - Drill-down to find failure locations
    - Analyze failures



# TEST VALIDATION DESIGN

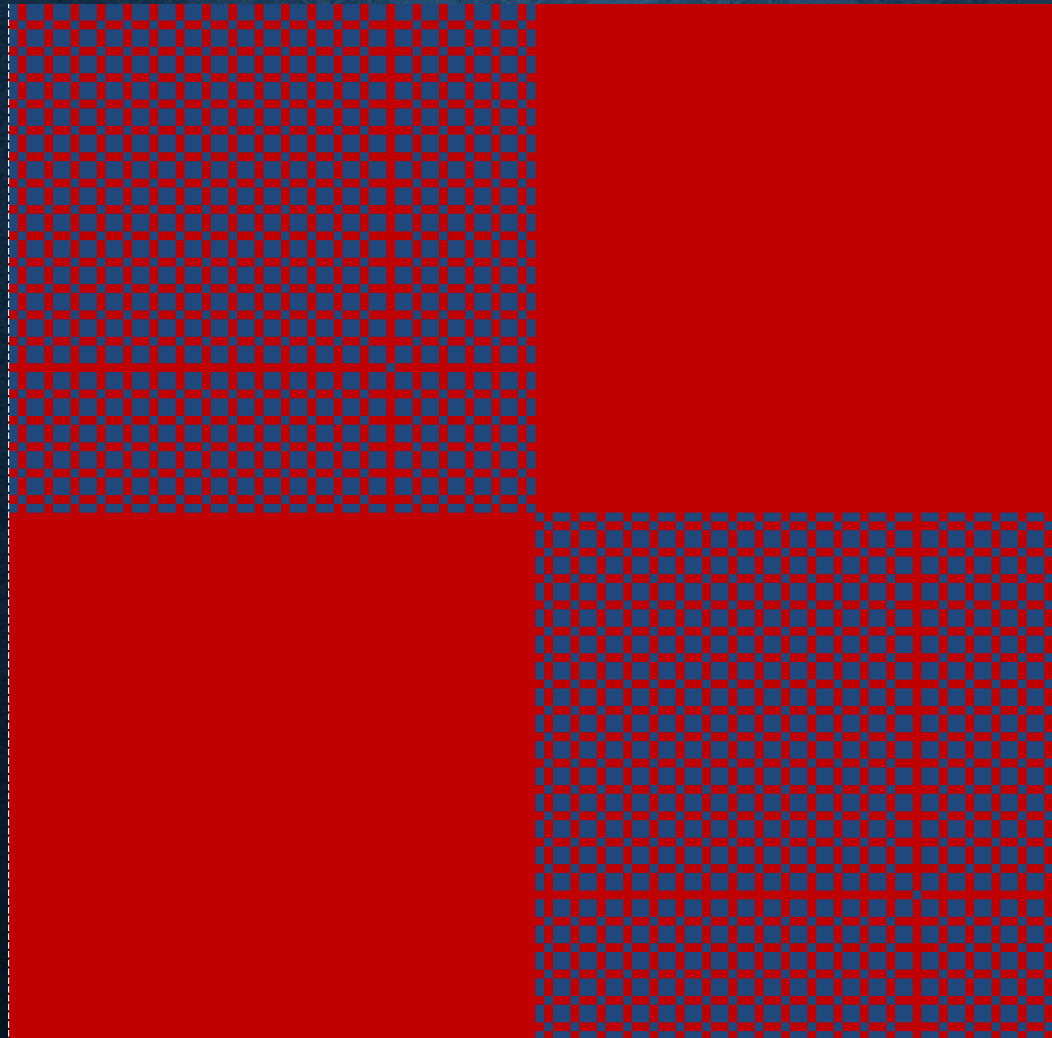
- What can affect the outcome of a test?
  - Preconditions (initial channel, time of day, TV guide data, channel stream dependencies)
  - STB Settings affect screenshots (resolution, aspect ratio, display mode, connector type)
  - Screenshots also affected by file compression (JPEGs)

# STB SETTINGS MATRIX

- STBs have 4 “Screen Settings”
  - (2) Aspect Ratios *4:3, 16:9*
  - (3) Resolutions *480i, 720p, 1080i*
  - (4) Display Modes *panscan, letterbox, etc.*
  - (5) Connection Types *HDMI, coax, etc.*
- **2 x 3 x 4 x 5 = 120 Combinations?!**



# STB SETTINGS MATRIX



# JPEG ARTIFACTING

My TV

Channel Guide

Edit Favorites



Now Playing

Search

Time Guide

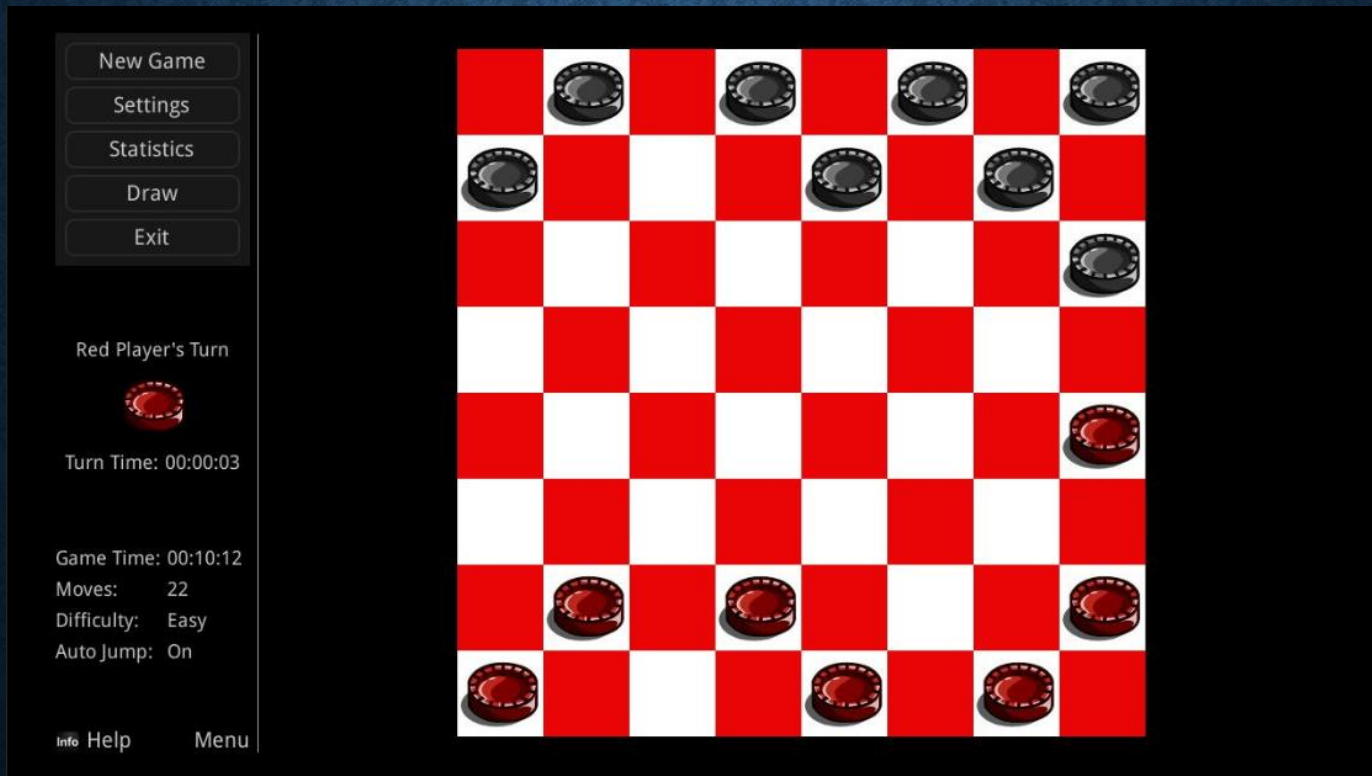
My TV



# COMPARING SCREENSHOTS

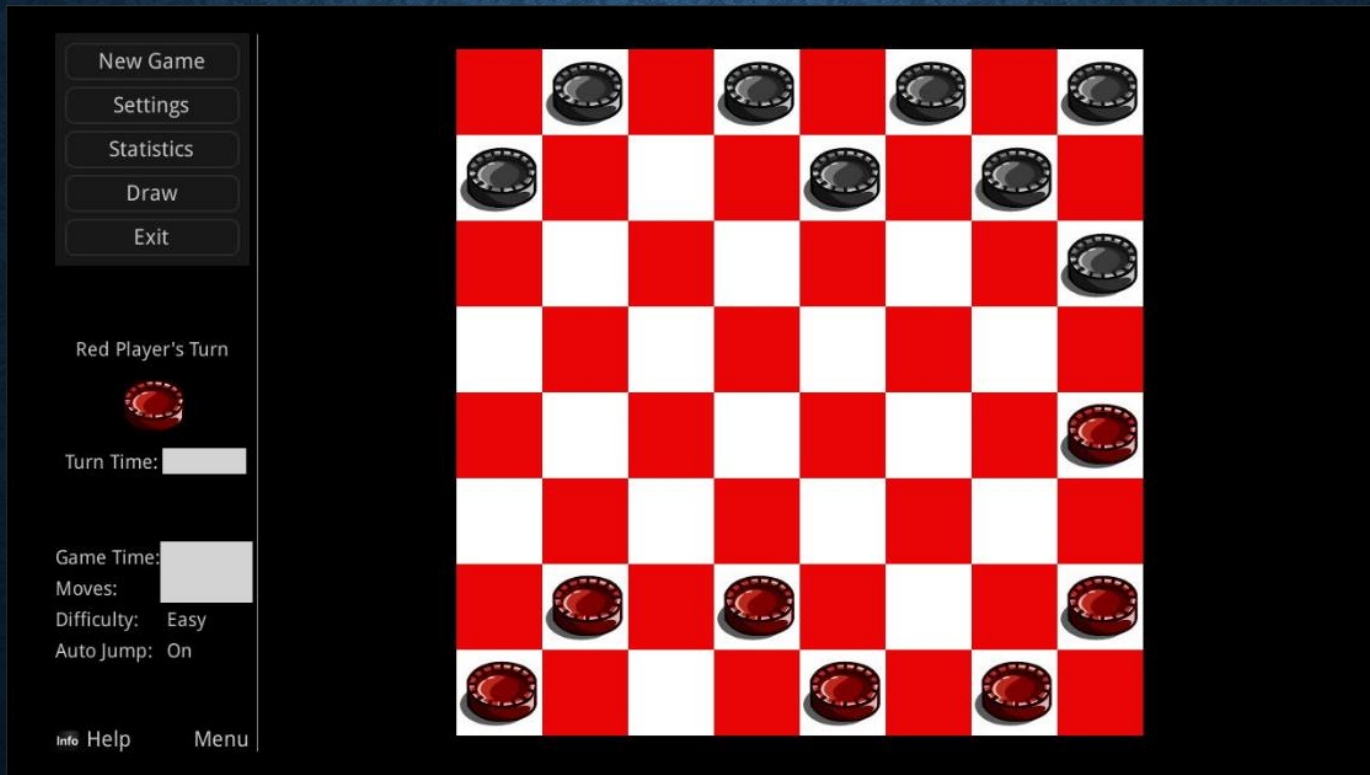
- Assumptions
  - Same STB Settings (model, resolution, aspect ratio)
  - “Failures” usually have “large” regions of error
- Algorithm
  - Masking
  - Luminosity Threshold
  - Error Threshold

# BASELINE





# BASELINE + MASKS



# FAILED SCREENSHOT





# FAILED REGIONS

