

# DYNAMIC VISUAL ACUITY

## DEVELOPMENT OF A NEW DISPLAY BASED TESTING METHOD

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### PURPOSE

THE DYNAMIC VISUAL ACUITY (DVA) DEFINES THE ABILITY TO DETECT FINE DETAILS IN MOVING OBJECTS. AVAILABLE DIGITAL TESTING DEVICES SUFFER FROM:

• A POOR DISPLAY PERFORMANCE

• MOTION BLUR

• AFTERIMAGES

CONSIDERING THE TECHNOLOGICAL PROGRESS OF VISUAL DISPLAY UNITS A NEW, STANDARDIZED TESTING METHOD FOR THE MEASUREMENT OF THE DVA SHOULD BE ACHIEVED.

### METHOD

MARKET ANALYSIS

SELF EXPERIMENTS

FEASABILITY ANALYSIS

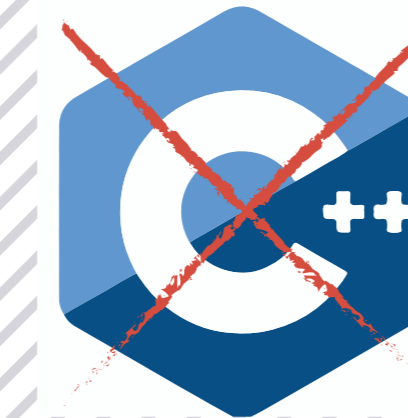
### RESULTS

#### CODE



SUITABLE & EASY TO USE; BUT VERY ELABORATE

Flash



REQUIRES EXCELLENT CODING SKILLS

## DVA TEST PROPERTIES

#### DISPLAY TECHNOLOGY



TOO SLOW (60HZ) OR POOR DPI OR TOO EXPENSIVE



VERY FAST 240HZ EIZO DISPLAY (BLINKING BACKLIGHT), GOOD REACTION TIME; AKZEPTABLE DPI



TOO SLOW AND POOR REACTION TIME; TOO SMALL OR TOO EXPENSIVE



POOR DPI; POOR REACTION TIME; INHOMOGENEOUS BACKLIGHT

#### PRESENTATION

##### OPTOTYPE



STANDARDIZED; MORE VALID VA; LOWER CHANCE OF GUESSING, BUT ROUND: BAD FOR DIGITAL PRESENTATION

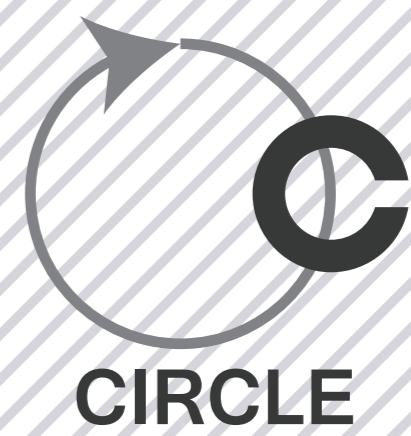


RECTANGULAR. GOOD FOR DIGITAL PRESENTATION; LESS RELIABLE (DUE TO BIG CONTRAST DIFFERENCES)

##### PATH

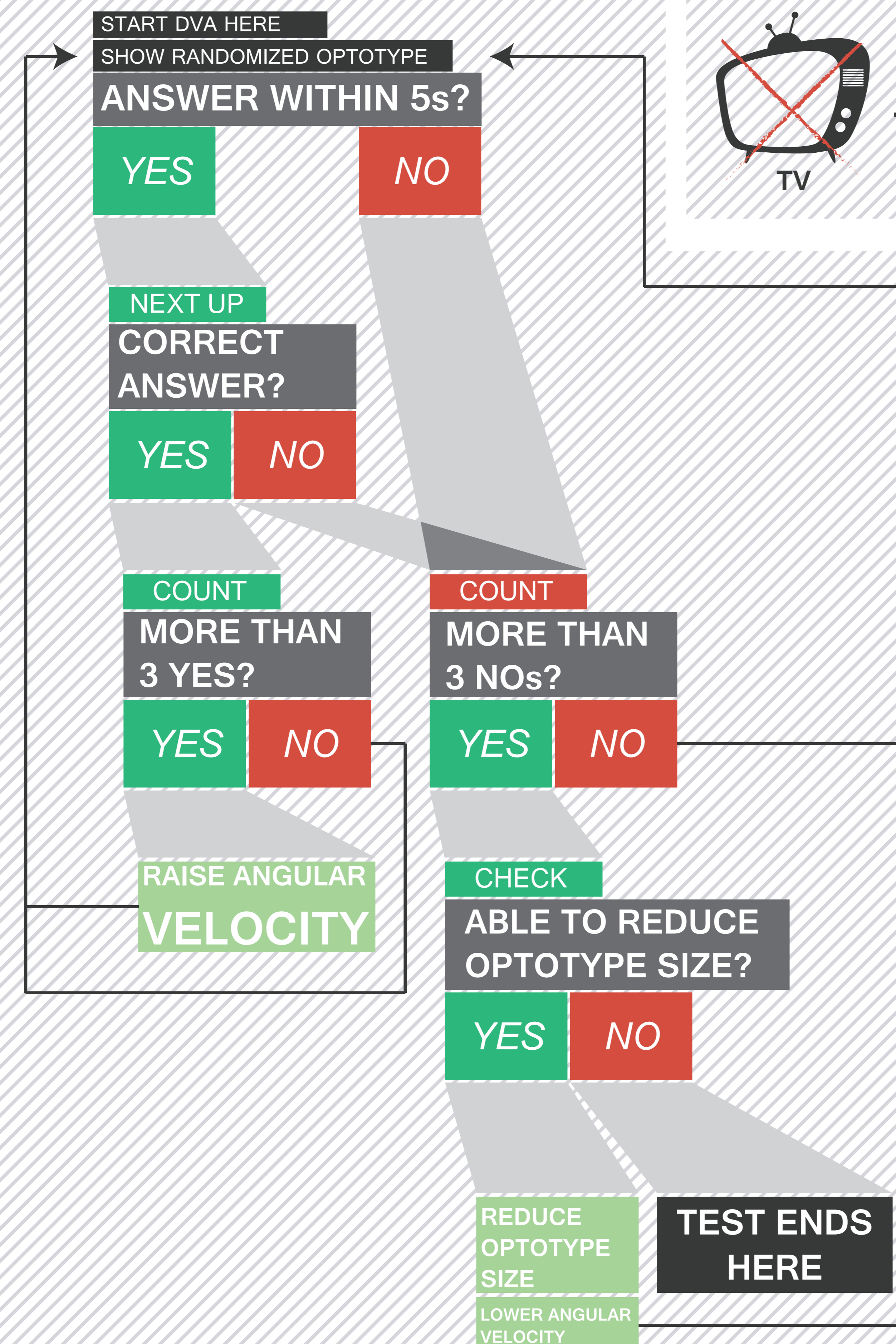


TOO SHORT DISPLAY DURATION FOR HIGHER ANGULAR VELOCITIES; VARIABLE DURATION TIME



NO END POINT - DURATION TIME CAN BE DEFINED TO A FIXED VALUE (2s)

#### TESTING METHOD



### CONCLUSION

DUE TO MODERN DISPLAY TECHNOLOGY IT IS POSSIBLE TO MEASURE THE DVA DEPENDING ON THE ANGULAR VELOCITY AND THE SIZE OF THE OPTOTYPE. THEREFORE A NEW STANDARDIZED TESTING METHOD HAS BEEN DEVELOPED. THE TECHNICAL PROGRESS NEEDS TO BE OBSERVED, ABOVE ALL: HDMI 2.0 AS WELL AS 4K-RESOLUTION. THE TEST SHOULD BE RECODED IN C++ TO MINIMIZE THE RANDOMIZATION AND PRESENTATION EFFORT AND TO LOWER THE REQUIRED COMPUTER PERFORMANCE. FURTHER STUDIES SHOULD DETERMINE AND VALIDATE DEFINED VELOCITIES AND SIZES OF THE MOVING OPTOTYPES.

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