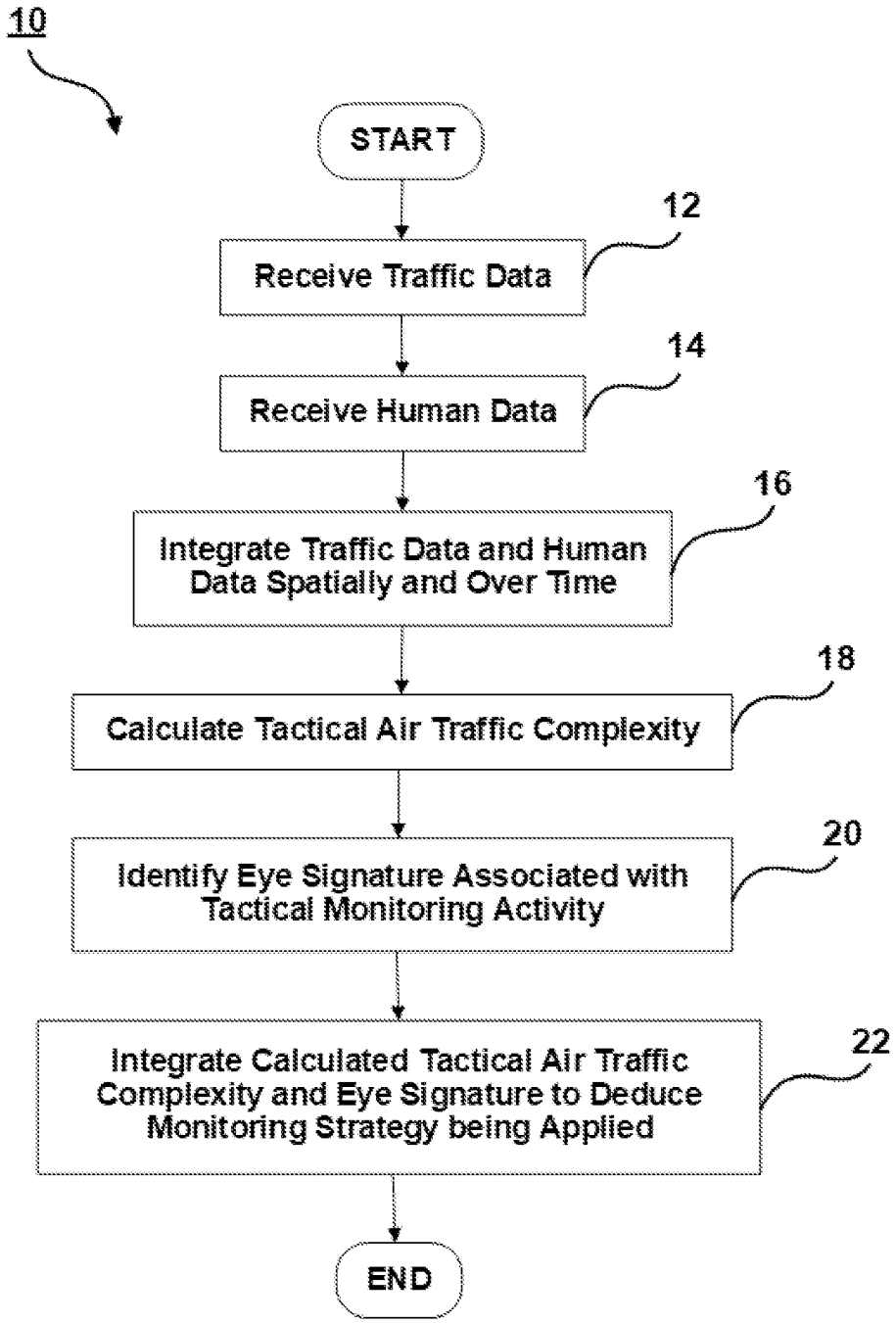

10
START
12
Receive Traffic Data
14
Receive Human Data
16
Integrate Traffic Data and Human Data Spatially and Over Time
18
Calculate Tactical Air Traffic Complexity
20
Identify Eye Signature Associated with Tactical Monitoring Activity
22
Integrate Calculated Tactical Air Traffic Complexity and Eye Signature to Deduce Monitoring Strategy being Applied
END

FIG. 1

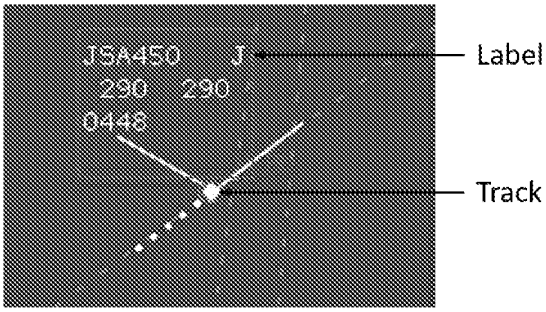


FIG. 2

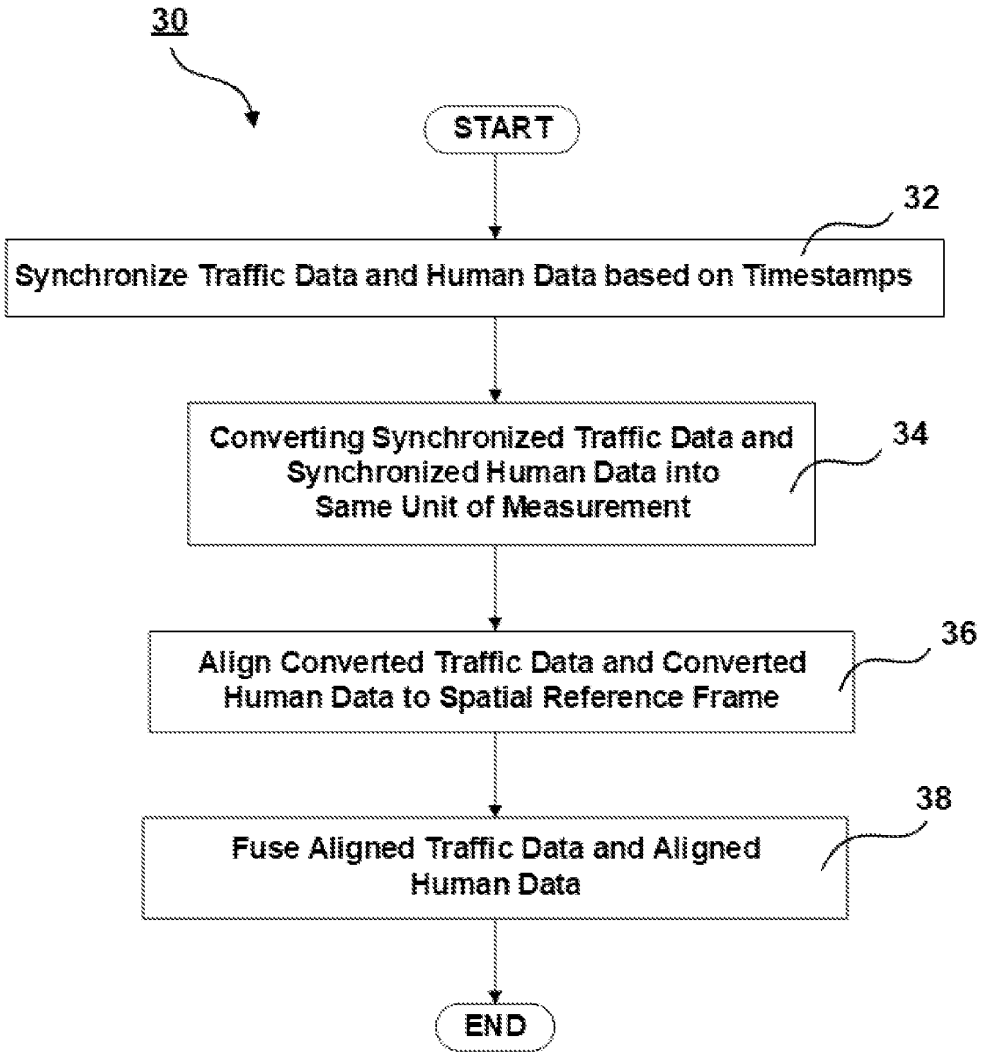

30
START
32
Synchronize Traffic Data and Human Data based on Timestamps
Converting Synchronized Traffic Data and Synchronized Human Data into Same Unit of Measurement
34
Align Converted Traffic Data and Converted Human Data to Spatial Reference Frame
36
Fuse Aligned Traffic Data and Aligned Human Data
38
END

FIG. 3

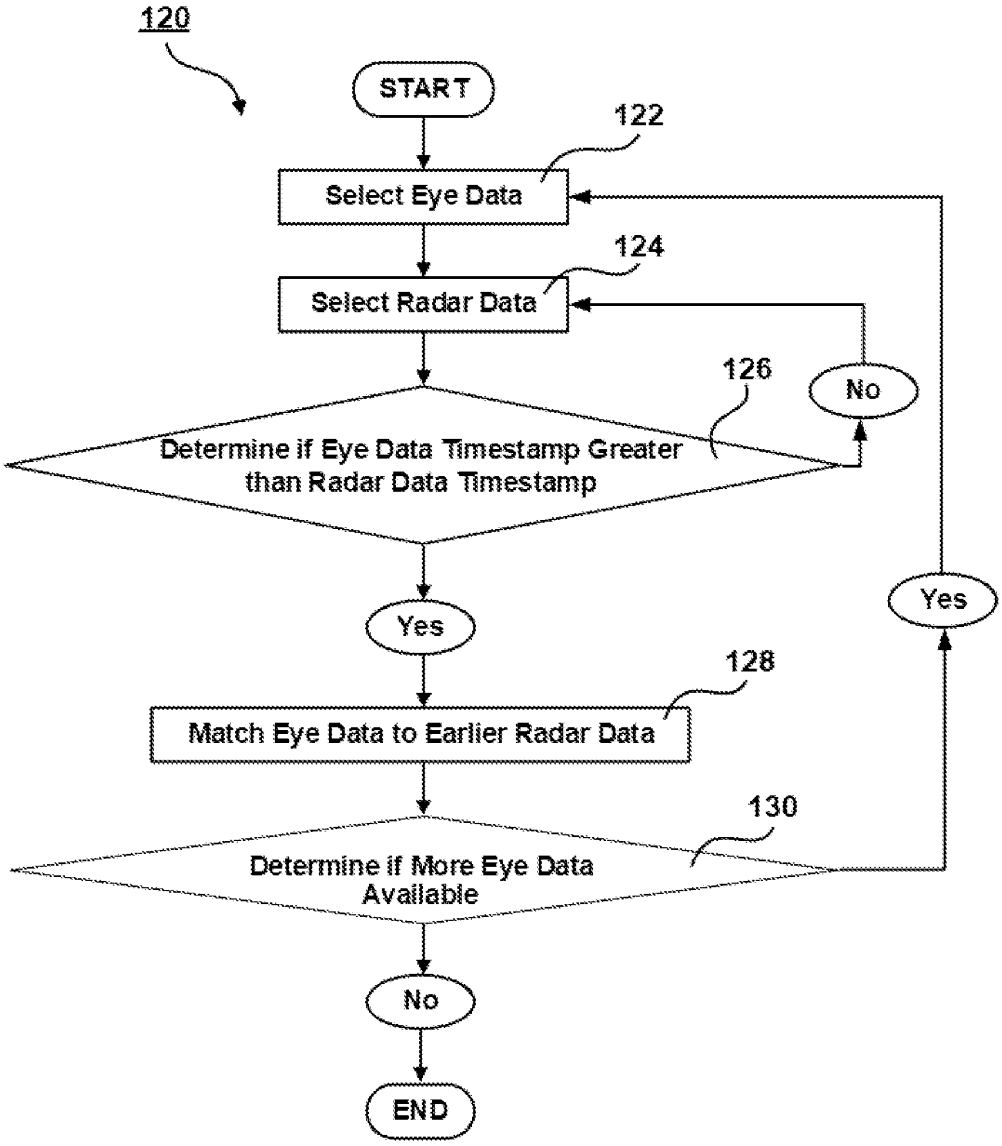

120
START
122
Select Eye Data
124
Select Radar Data
126
No
Determine if Eye Data Timestamp Greater than Radar Data Timestamp
Yes
Yes
128
Match Eye Data to Earlier Radar Data
130
Determine if More Eye Data Available
No
END

FIG. 4

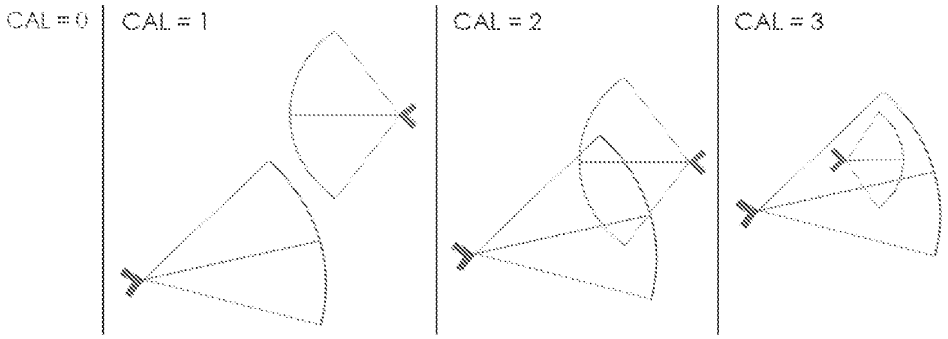

CAL = 0
CAL = 1
CAL = 2
CAL = 3

FIG. 5

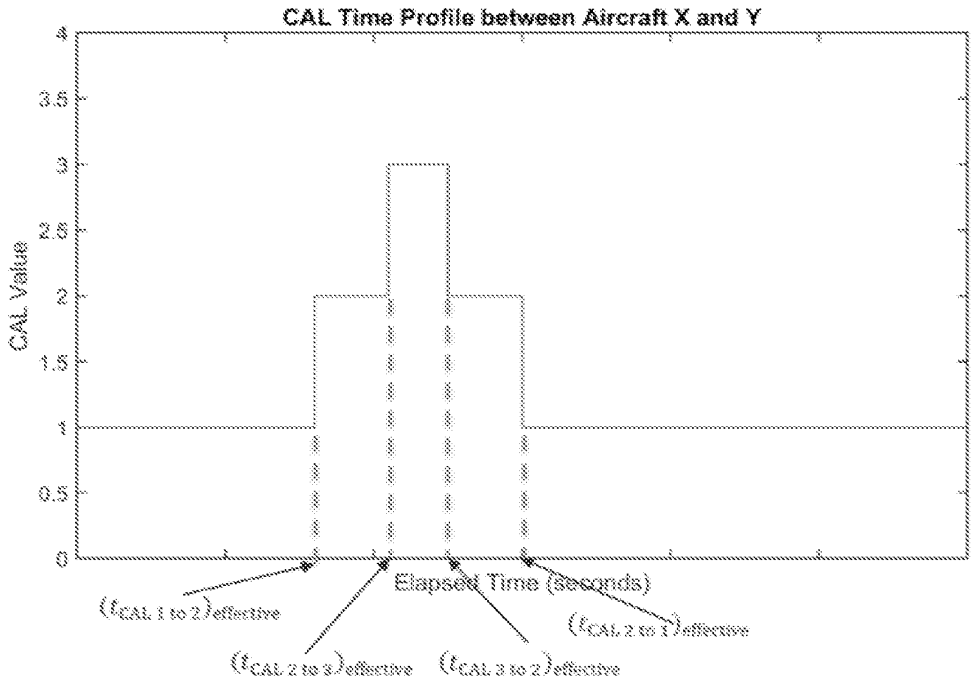

CAL Time Profile between Aircraft X and Y
CAL Value
Elapsed Time (seconds)
$(t_{CAL\ 1\ to\ 2})_{effective}$
$(t_{CAL\ 2\ to\ 3})_{effective}$
$(t_{CAL\ 3\ to\ 2})_{effective}$
$(t_{CAL\ 2\ to\ 1})_{effective}$

FIG. 6

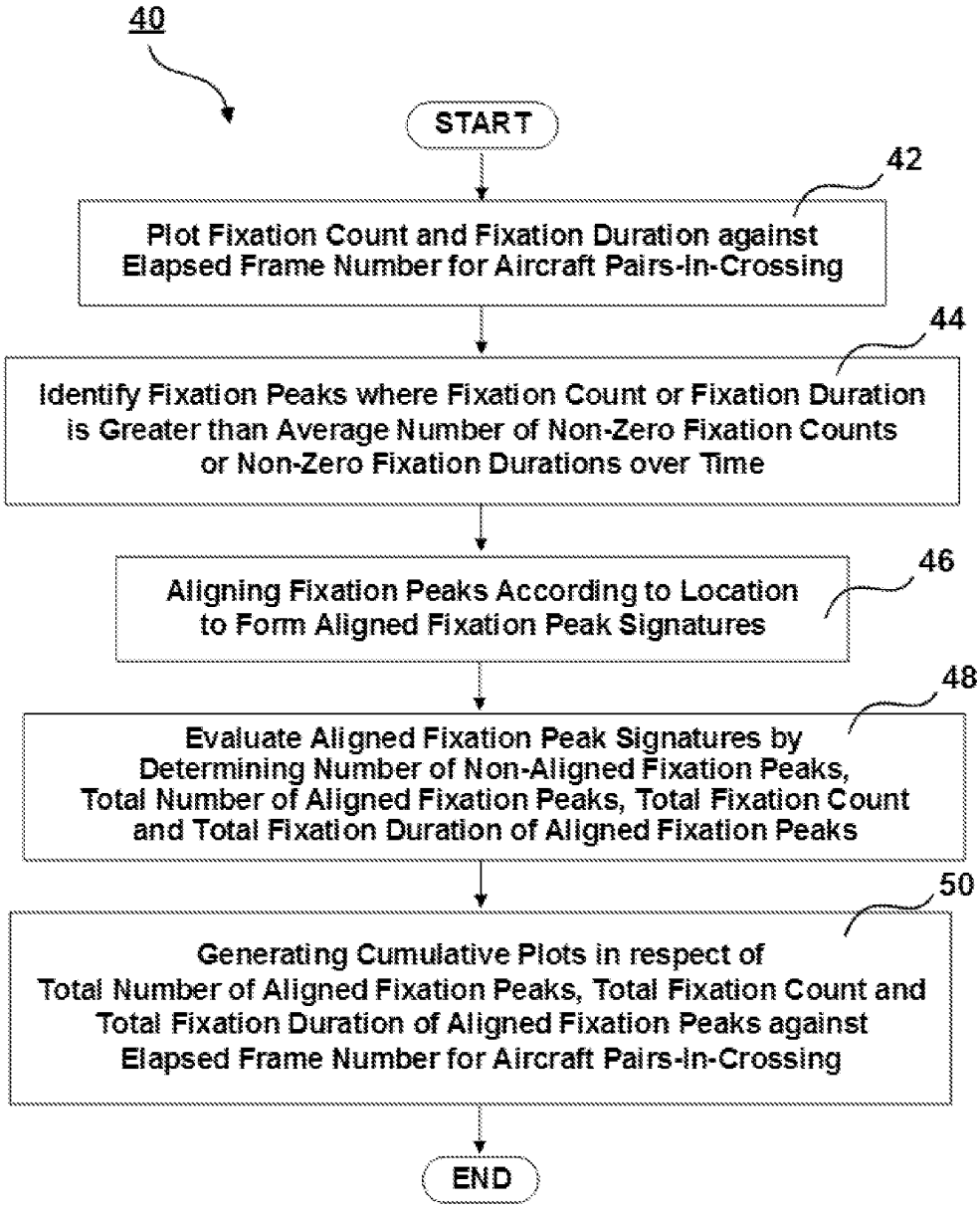

40
START
42
Plot Fixation Count and Fixation Duration against Elapsed Frame Number for Aircraft Pairs-In-Crossing
44
Identify Fixation Peaks where Fixation Count or Fixation Duration is Greater than Average Number of Non-Zero Fixation Counts or Non-Zero Fixation Durations over Time
46
Aligning Fixation Peaks According to Location to Form Aligned Fixation Peak Signatures
48
Evaluate Aligned Fixation Peak Signatures by Determining Number of Non-Aligned Fixation Peaks, Total Number of Aligned Fixation Peaks, Total Fixation Count and Total Fixation Duration of Aligned Fixation Peaks
50
Generating Cumulative Plots in respect of Total Number of Aligned Fixation Peaks, Total Fixation Count and Total Fixation Duration of Aligned Fixation Peaks against Elapsed Frame Number for Aircraft Pairs-In-Crossing
END

FIG. 7

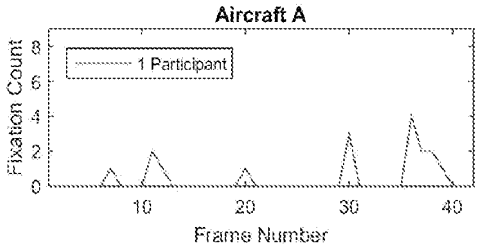


FIG. 8A

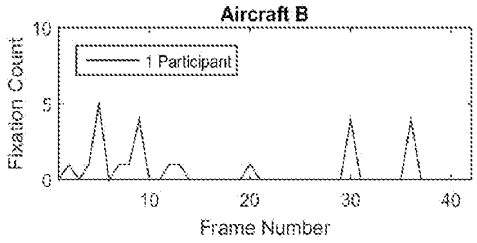


FIG. 8B

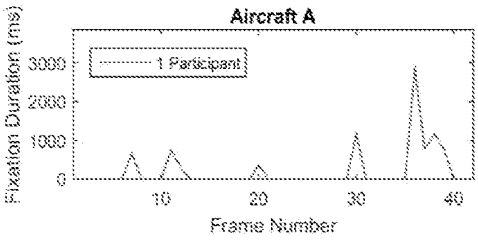


FIG. 8C

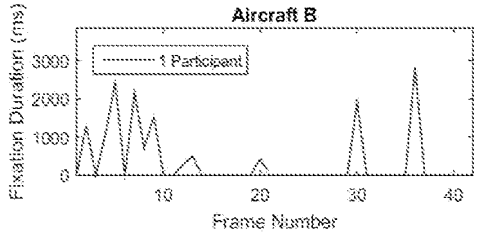


FIG. 8D

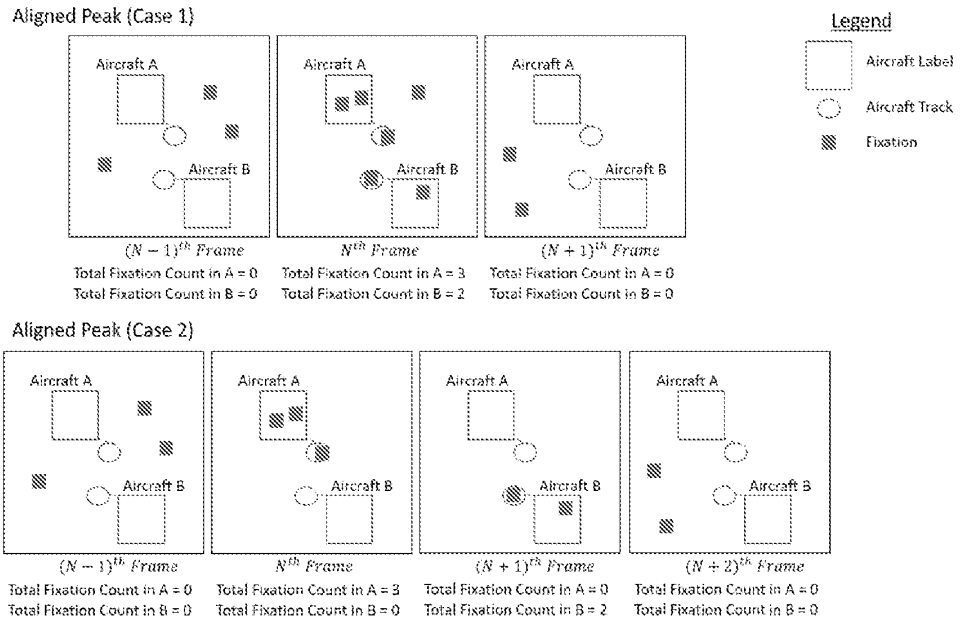


FIG. 9

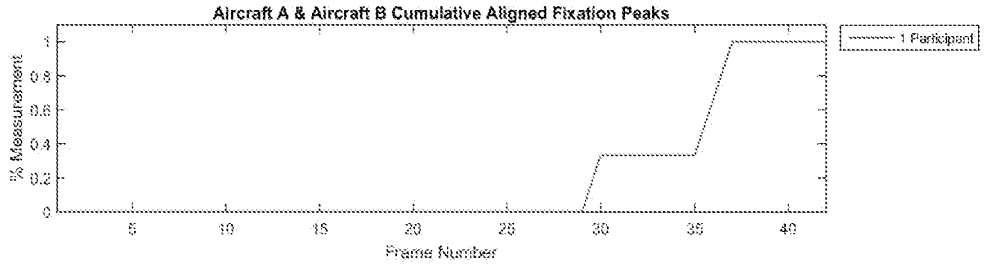


FIG. 10A

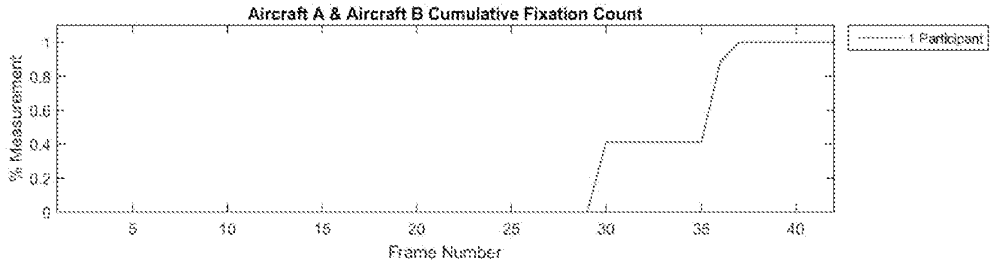


FIG. 10B

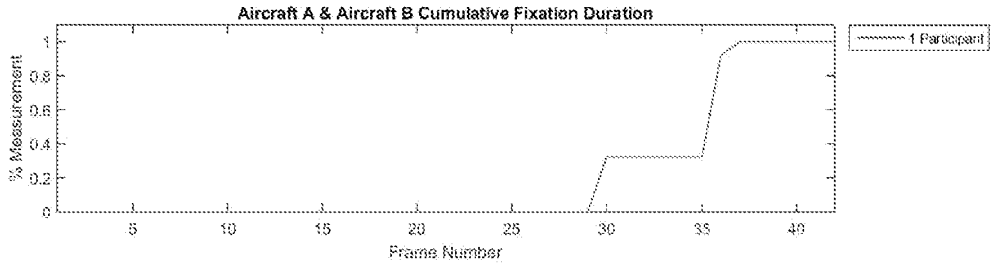


FIG. 10C

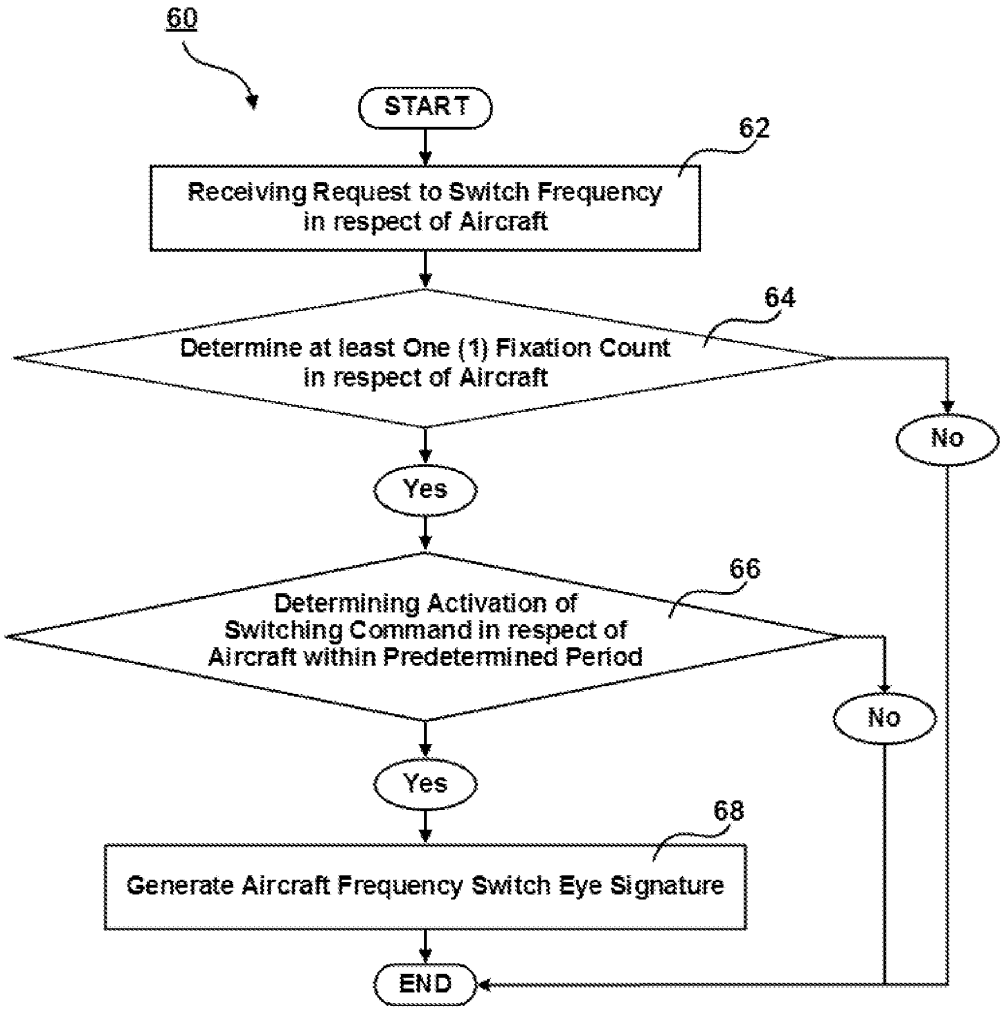

60
START
62
Receiving Request to Switch Frequency in respect of Aircraft
64
Determine at least One (1) Fixation Count in respect of Aircraft
No
Yes
66
Determining Activation of Switching Command in respect of Aircraft within Predetermined Period
No
Yes
68
Generate Aircraft Frequency Switch Eye Signature
END

FIG. 11

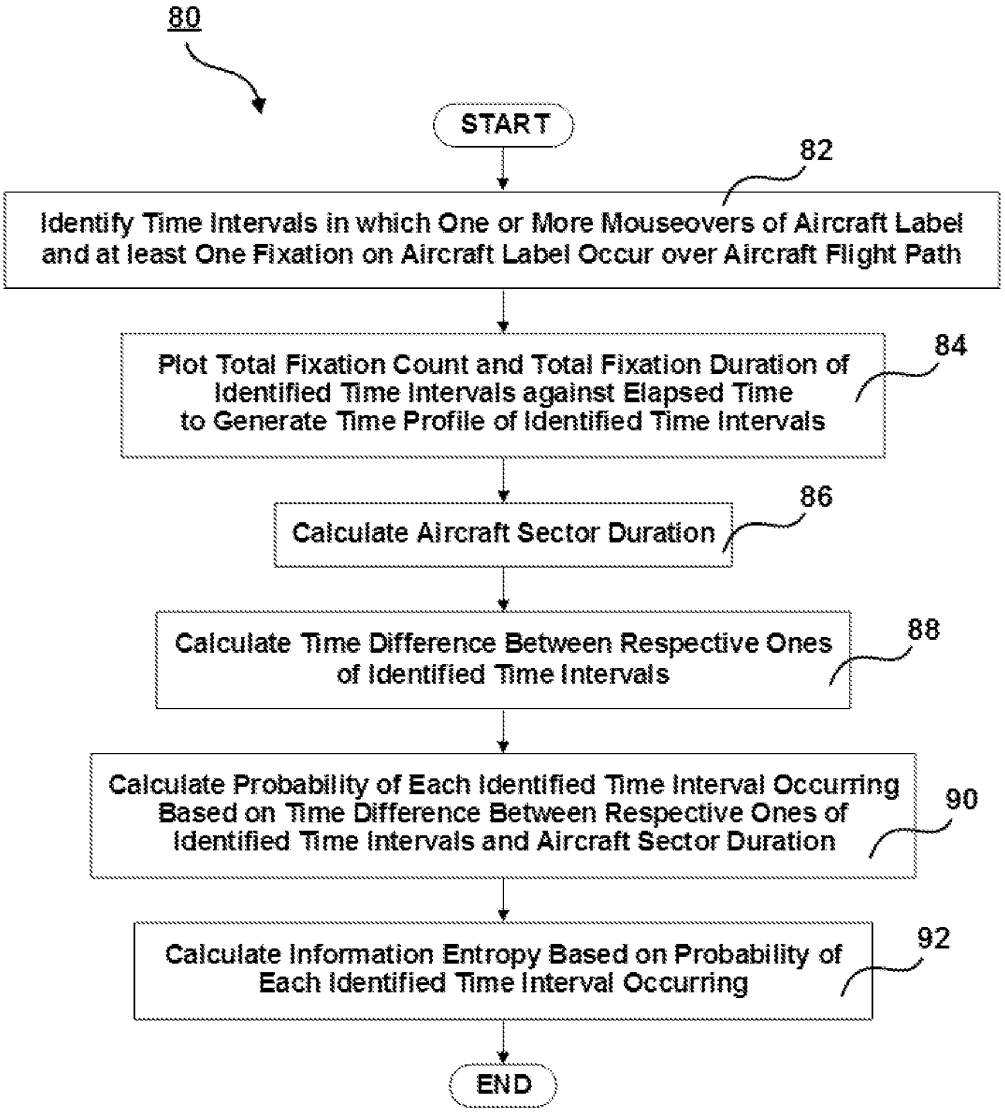

80
START
82
Identify Time Intervals in which One or More Mouseovers of Aircraft Label and at least One Fixation on Aircraft Label Occur over Aircraft Flight Path
84
Plot Total Fixation Count and Total Fixation Duration of Identified Time Intervals against Elapsed Time to Generate Time Profile of Identified Time Intervals
86
Calculate Aircraft Sector Duration
88
Calculate Time Difference Between Respective Ones of Identified Time Intervals
90
Calculate Probability of Each Identified Time Interval Occurring Based on Time Difference Between Respective Ones of Identified Time Intervals and Aircraft Sector Duration
92
Calculate Information Entropy Based on Probability of Each Identified Time Interval Occurring
END

FIG. 12

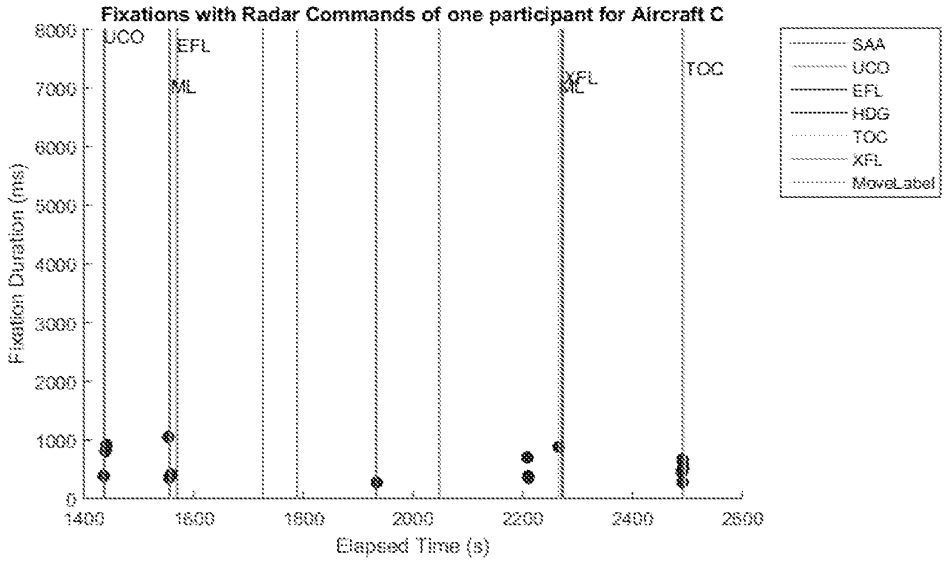

Fixations with Radar Commands of one participant for Aircraft C
UCO
EFL
ML
XFL
TOC
SAA
UCO
EFL
HDG
TOC
XFL
MoveLabel
Fixation Duration (ms)
Elapsed Time (s)

FIG. 13

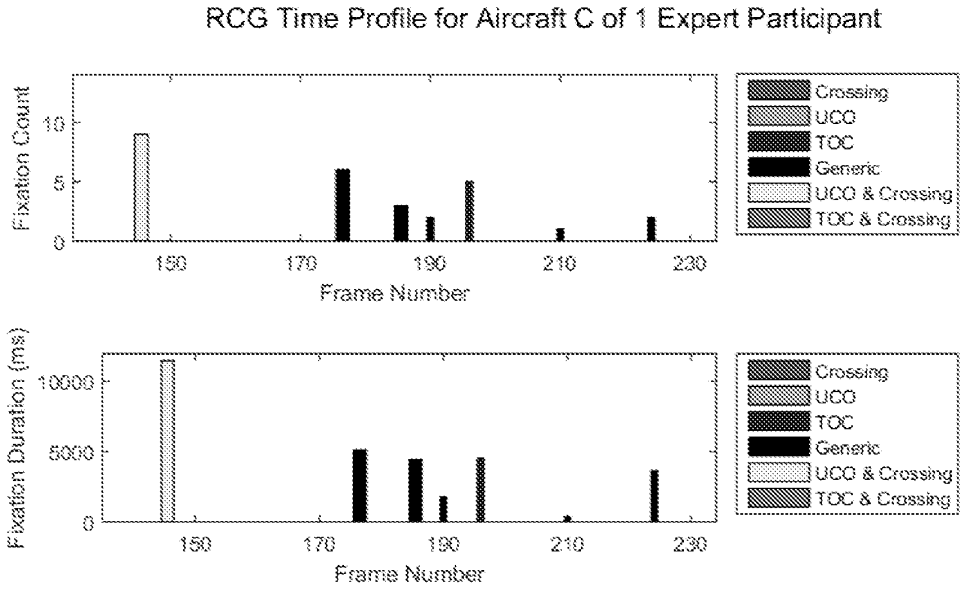

RCG Time Profile for Aircraft C of 1 Expert Participant
Fixation Count
Frame Number
Fixation Duration (ms)
Frame Number
Crossing
UCO
TOC
Generic
UCO & Crossing
TOC & Crossing

FIG. 14

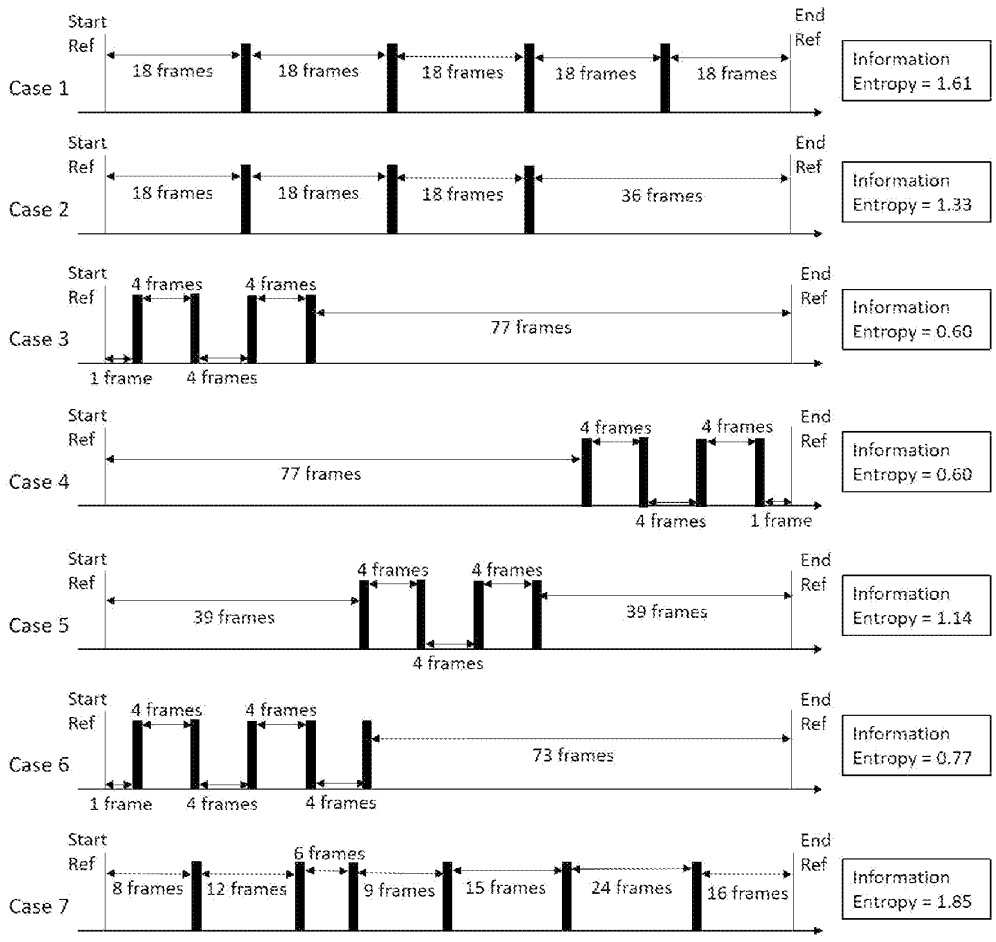

Start Ref
End Ref
Case 1
18 frames
18 frames
18 frames
18 frames
18 frames
Information Entropy = 1.61
Case 2
18 frames
18 frames
18 frames
36 frames
Information Entropy = 1.33
Case 3
4 frames
4 frames
77 frames
1 frame
4 frames
Information Entropy = 0.60
Case 4
77 frames
4 frames
4 frames
4 frames
1 frame
Information Entropy = 0.60
Case 5
39 frames
4 frames
4 frames
39 frames
4 frames
Information Entropy = 1.14
Case 6
4 frames
4 frames
73 frames
1 frame
4 frames
4 frames
Information Entropy = 0.77
Case 7
8 frames
12 frames
6 frames
9 frames
15 frames
24 frames
16 frames
Information Entropy = 1.85

FIG. 15

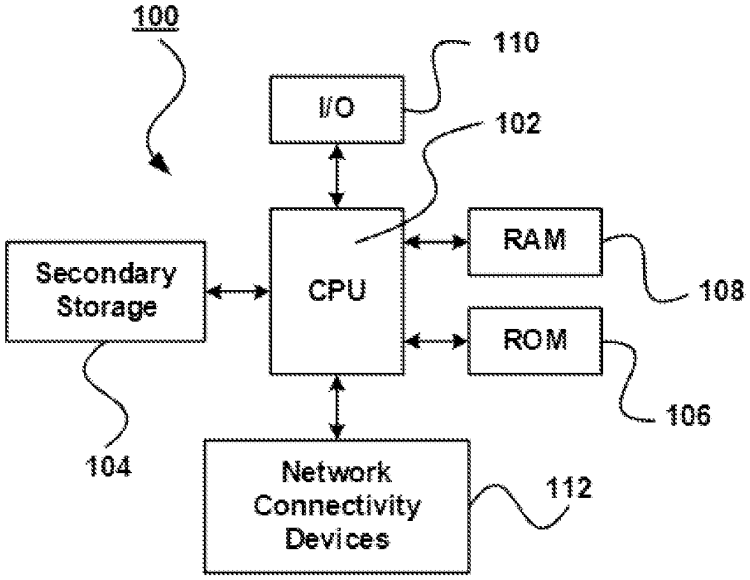


FIG. 16

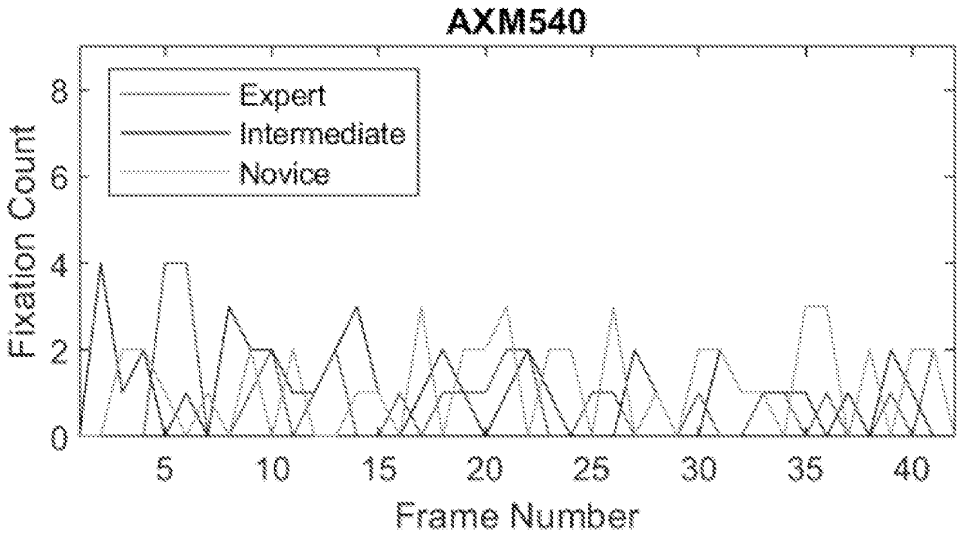


FIG. 17A

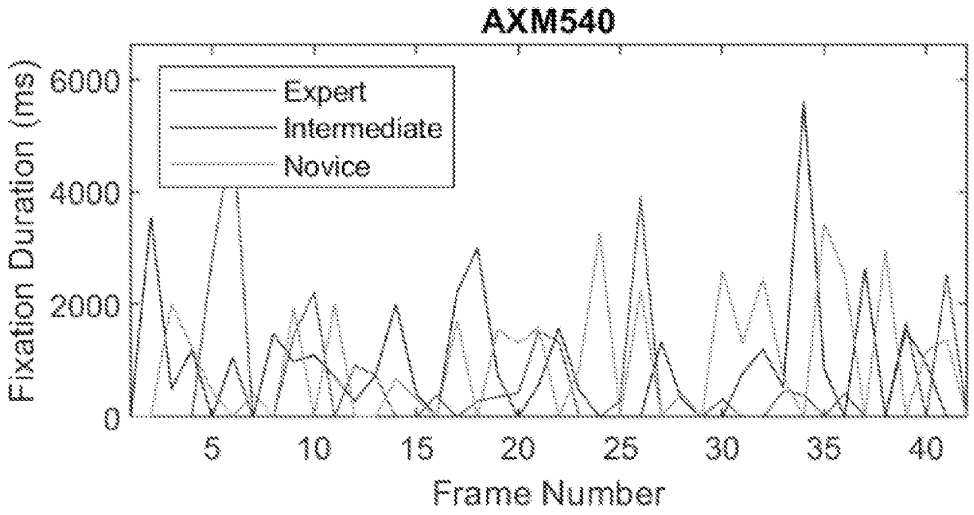


FIG. 17B

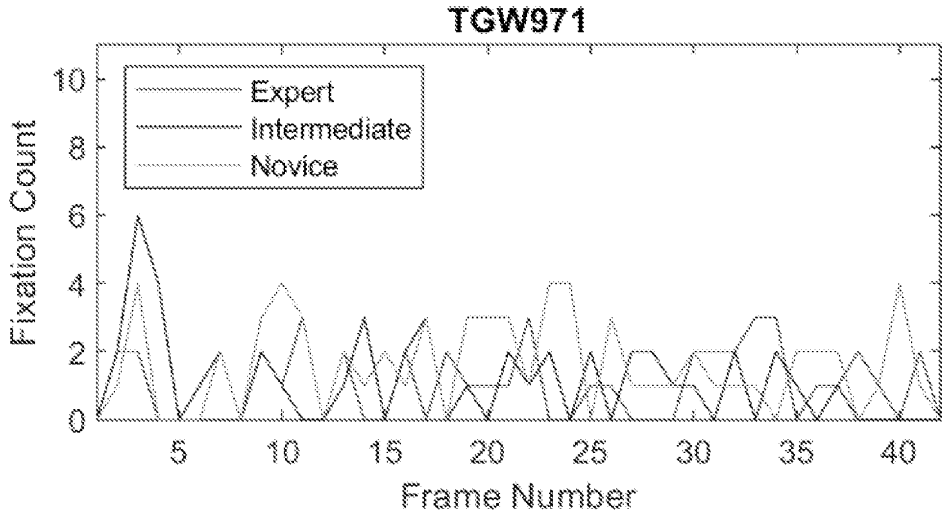


FIG. 17C

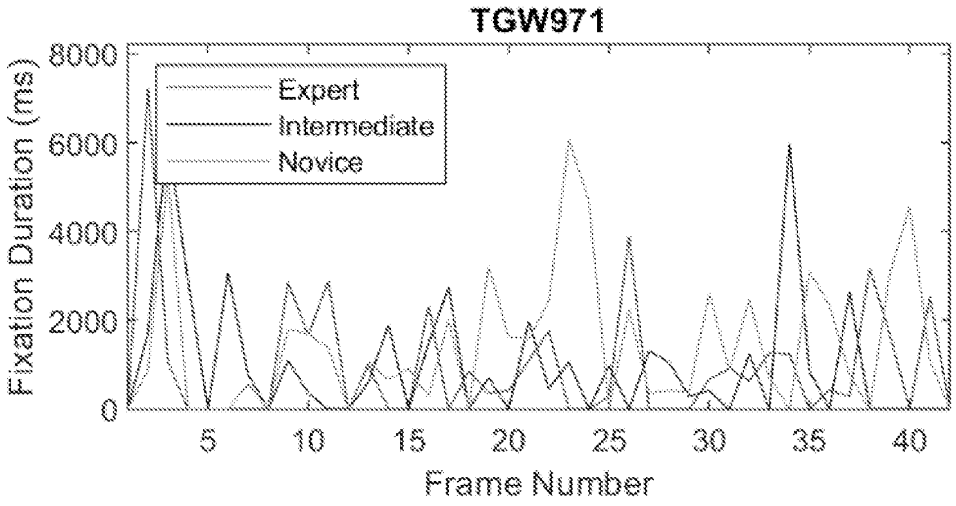


FIG. 17D

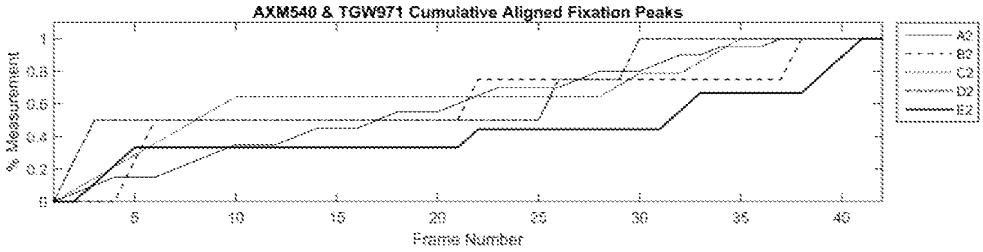


FIG. 18A

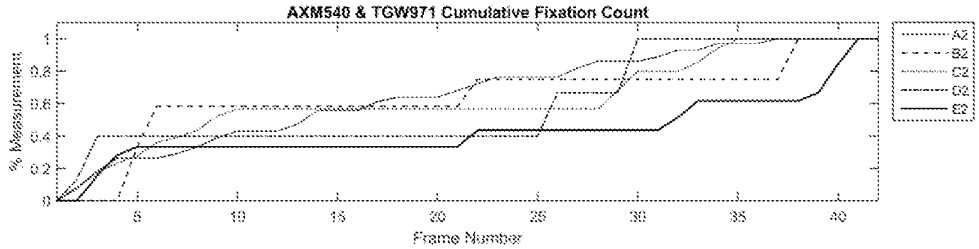


FIG. 18B

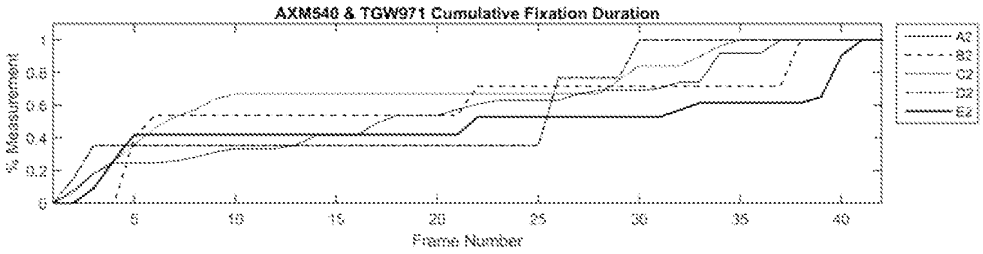


FIG. 18C

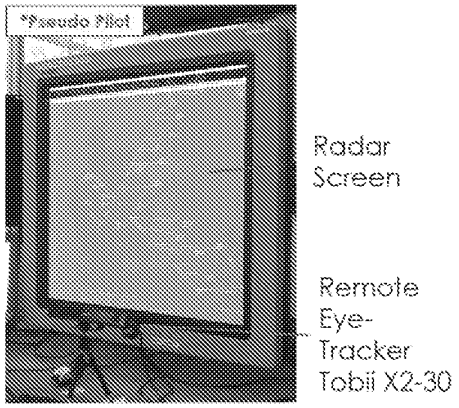


FIG. 19

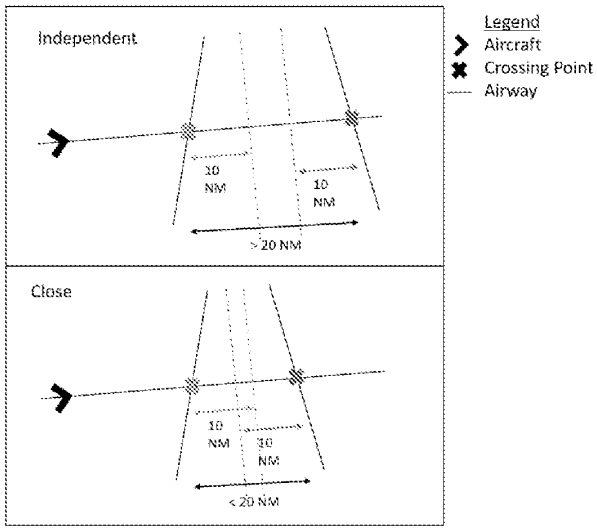

Independent
Legend
Aircraft
Crossing Point
Airway
10 NM
10 NM
> 20 NM
Close
10 NM
10 NM
< 20 NM

FIG. 20

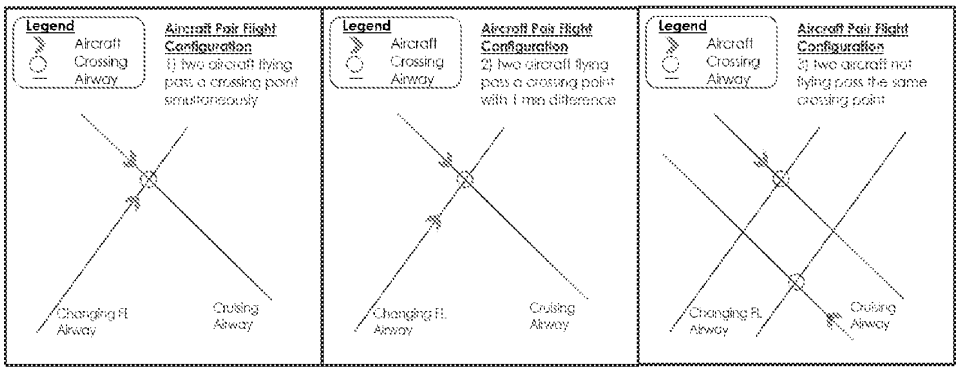

Legend
Aircraft
Crossing Airway
Aircraft Pair Flight Configuration
1) two aircraft flying pass a crossing point simultaneously
Changing FL Airway
Cruising Airway
Legend
Aircraft
Crossing Airway
Aircraft Pair Flight Configuration
2) two aircraft flying pass a crossing point with 1 min difference
Changing FL Airway
Cruising Airway
Legend
Aircraft
Crossing Airway
Aircraft Pair Flight Configuration
3) two aircraft not flying pass the same crossing point
Changing FL Airway
Cruising Airway

FIG. 21

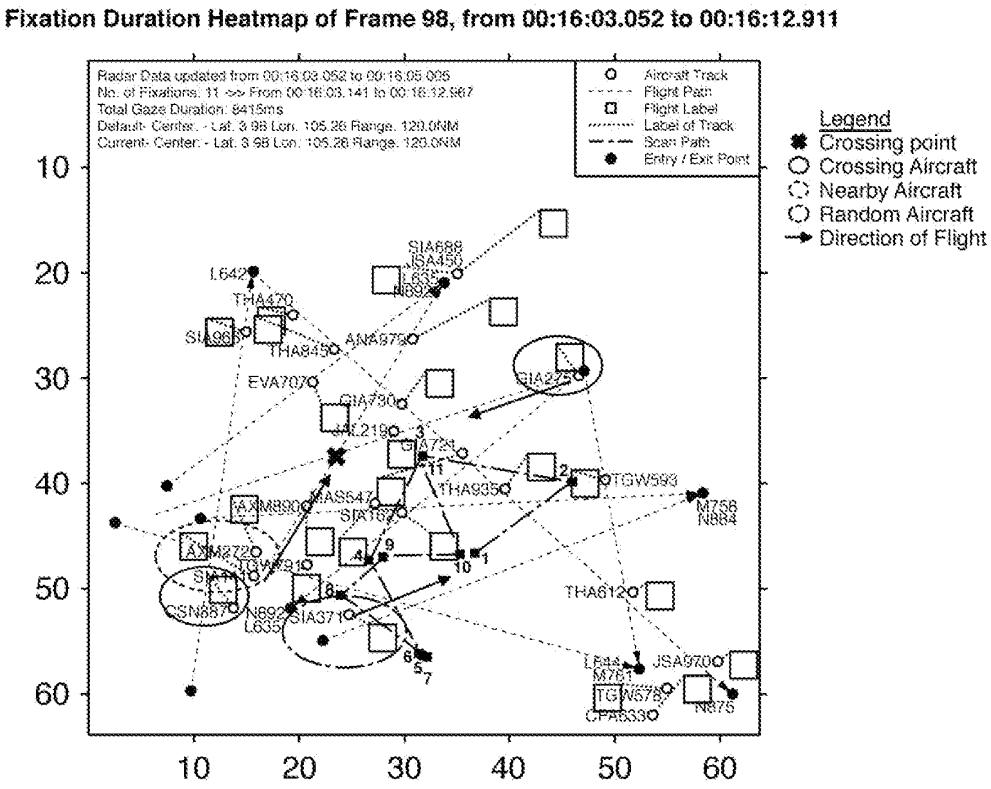


FIG. 22

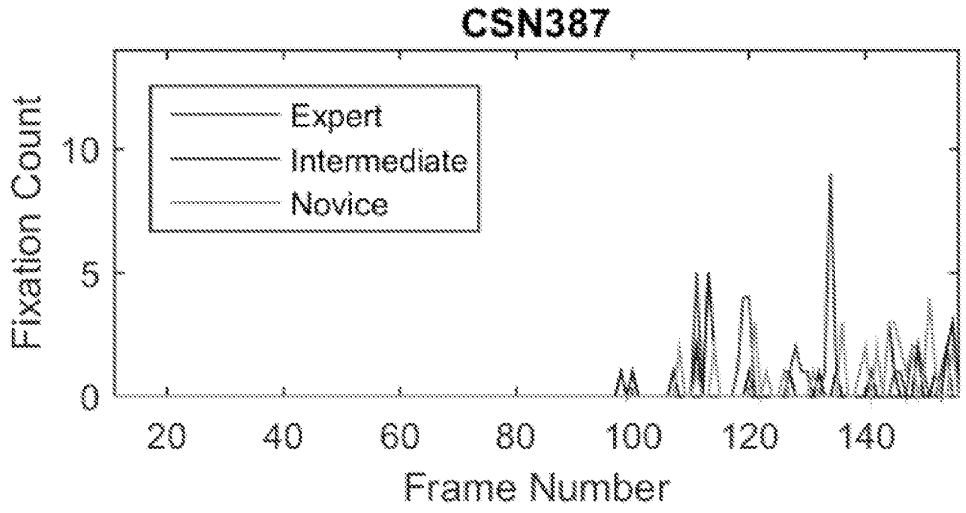


FIG. 23A

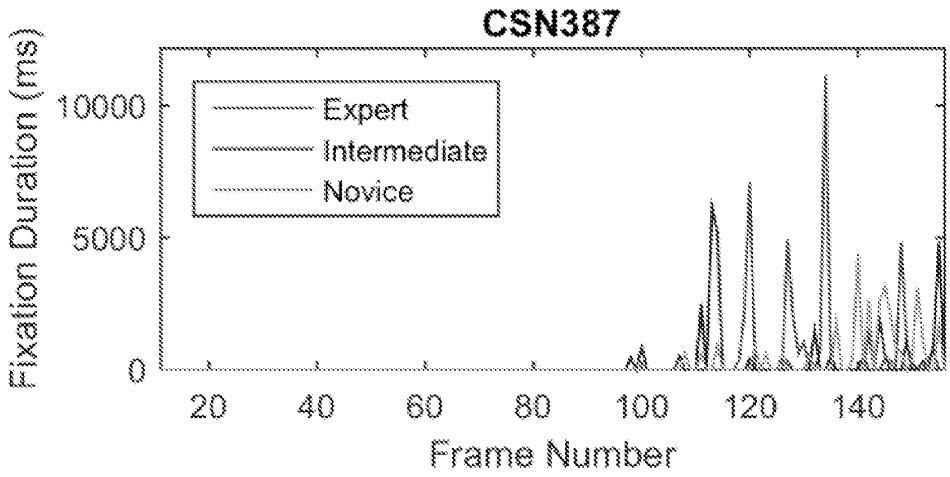


FIG. 23B

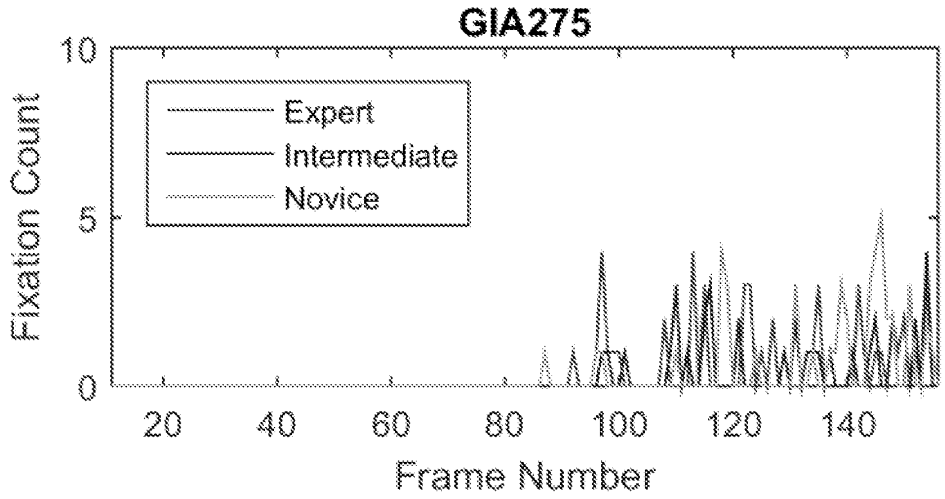


FIG. 23C

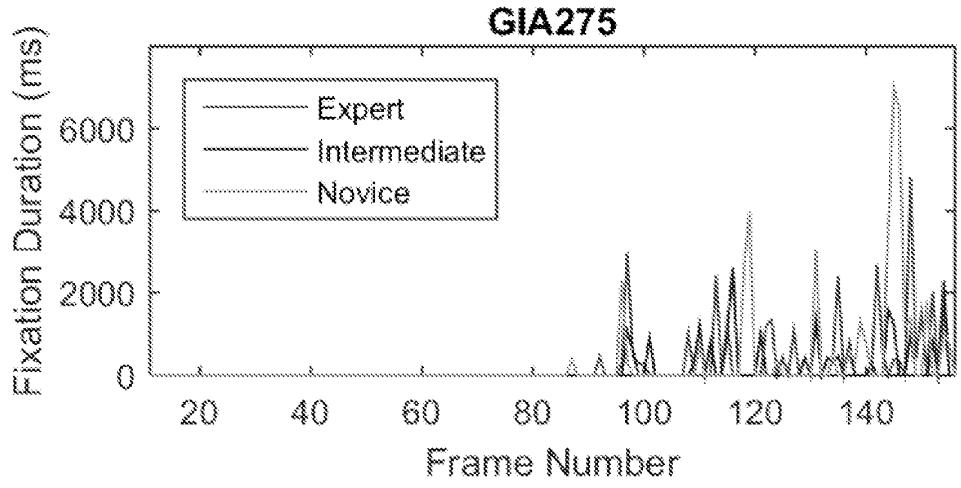


FIG. 23D

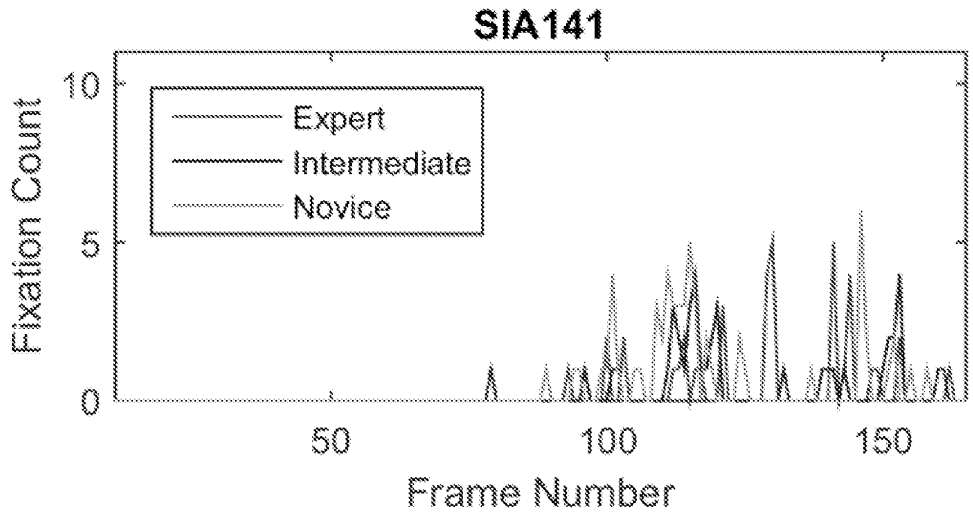


FIG. 24A

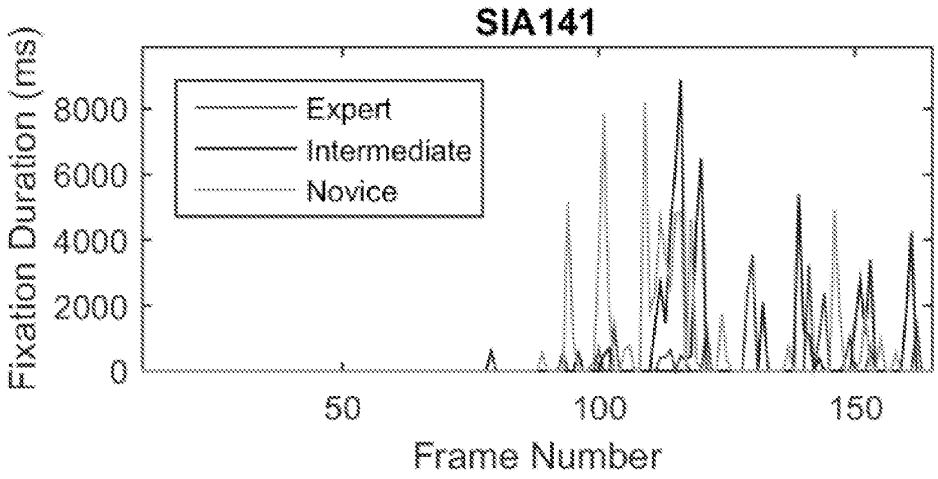


FIG. 24B

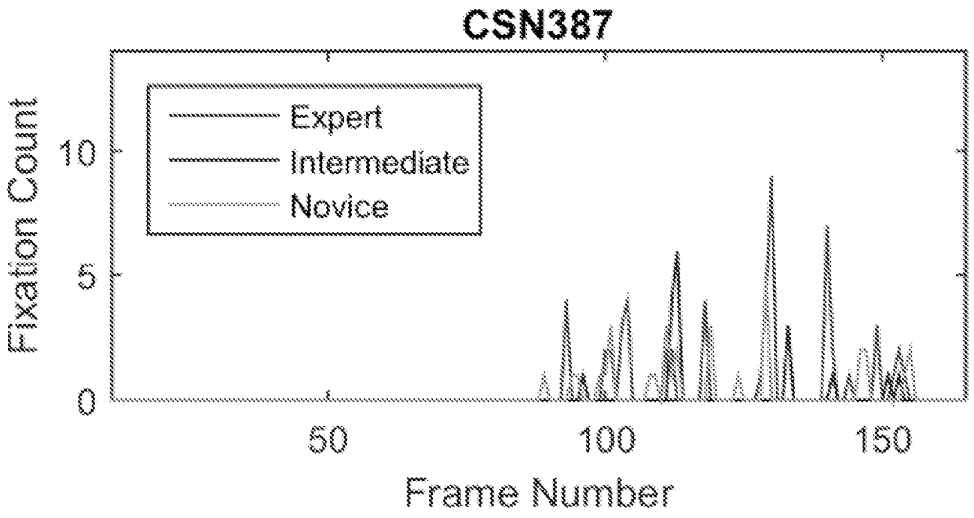


FIG. 24C

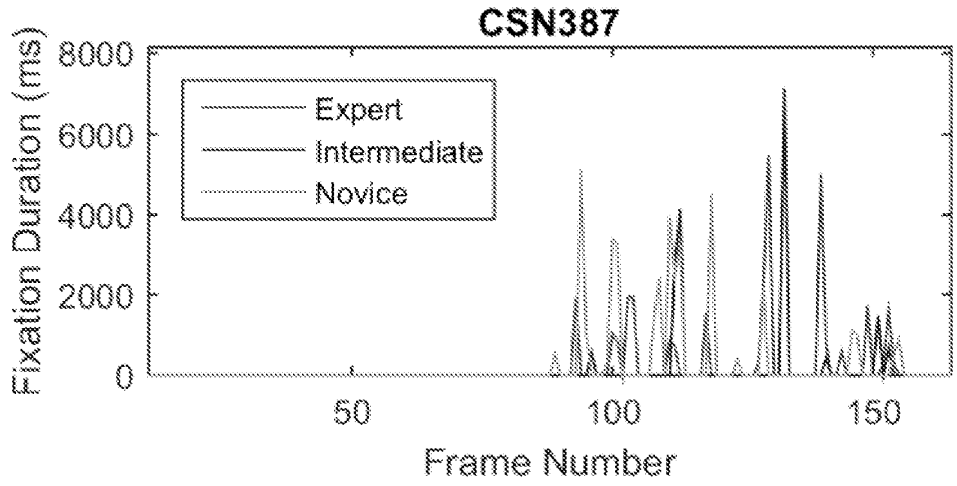


FIG. 24D

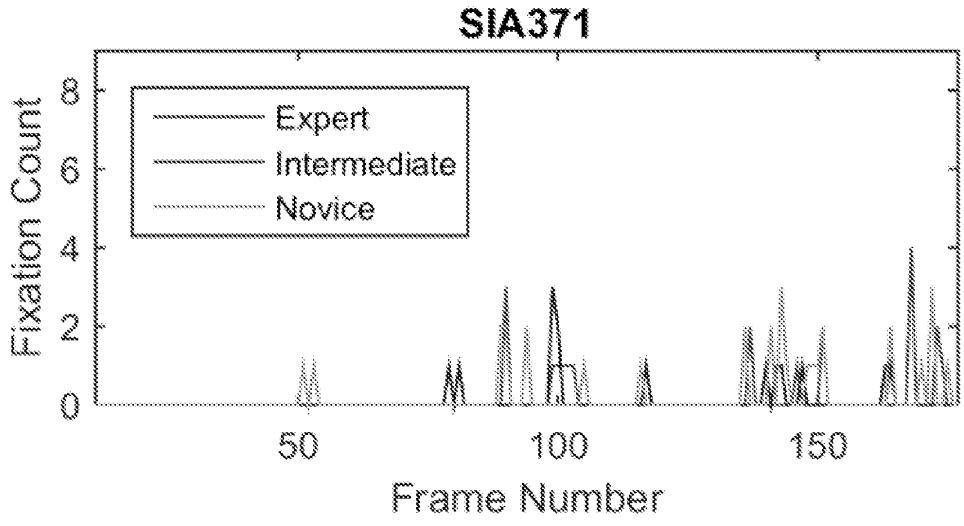


FIG. 25A

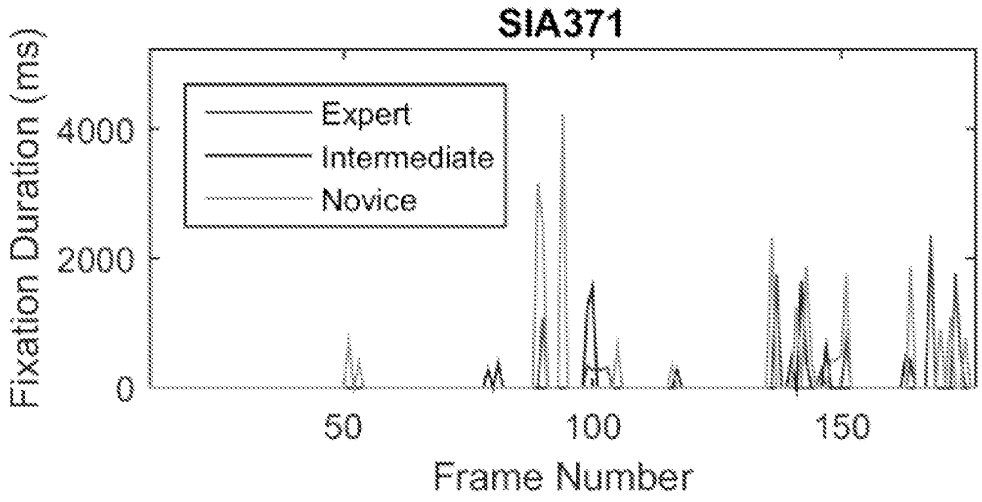


FIG. 25B

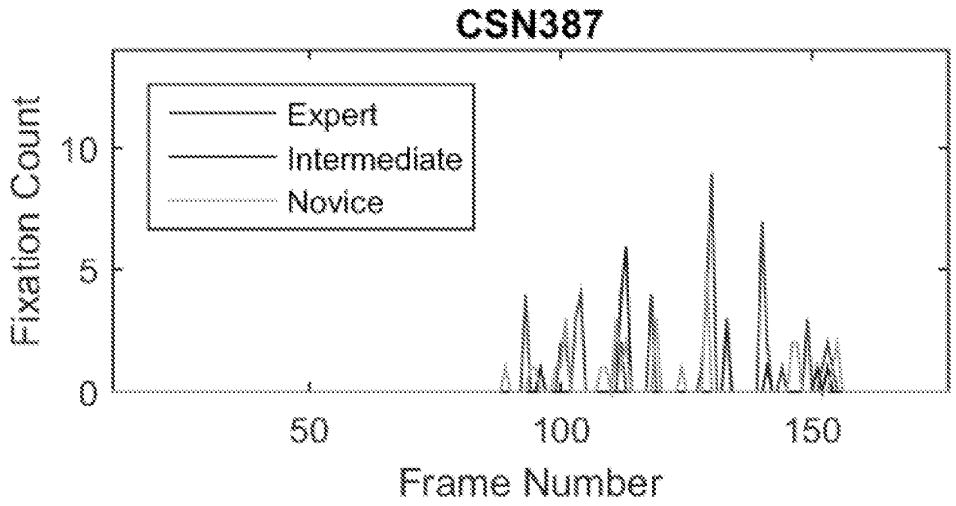


FIG. 25C

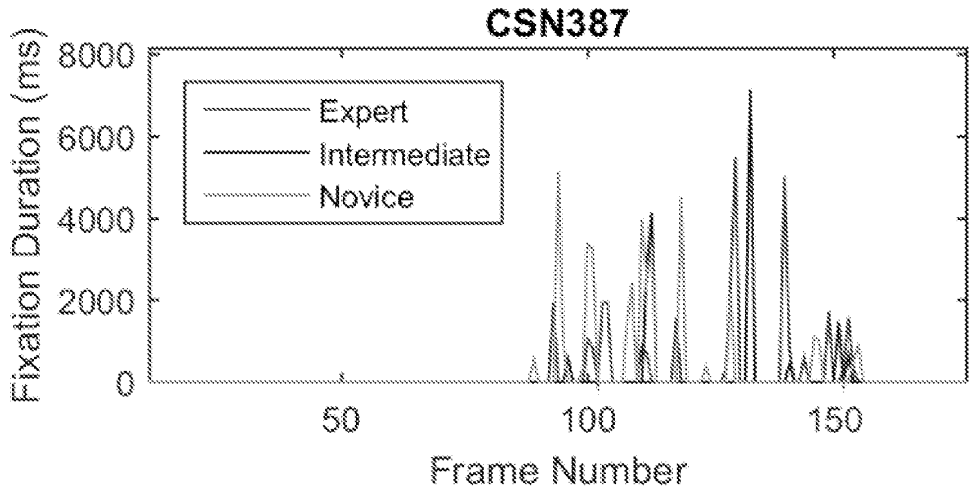


FIG. 25D

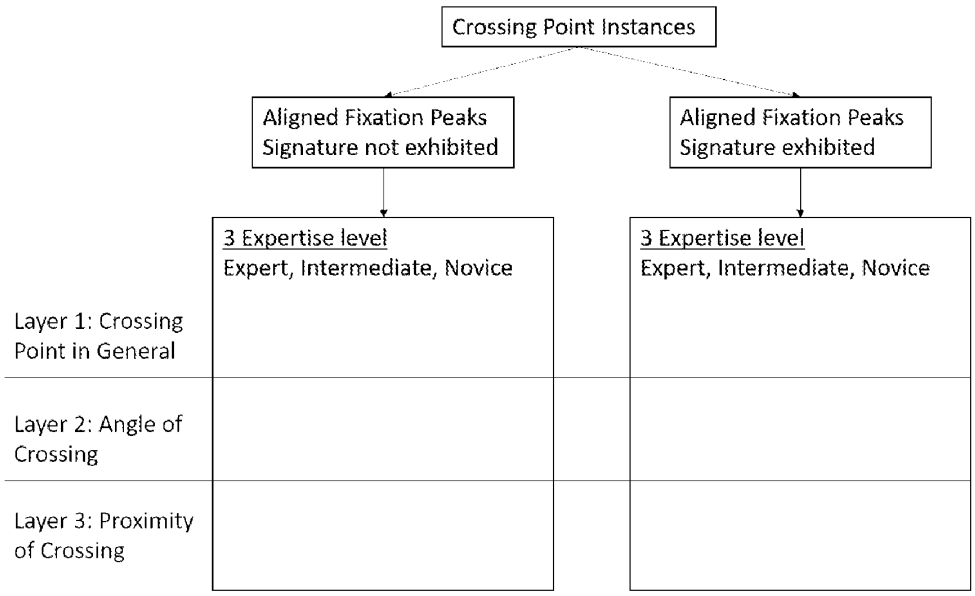


FIG. 26

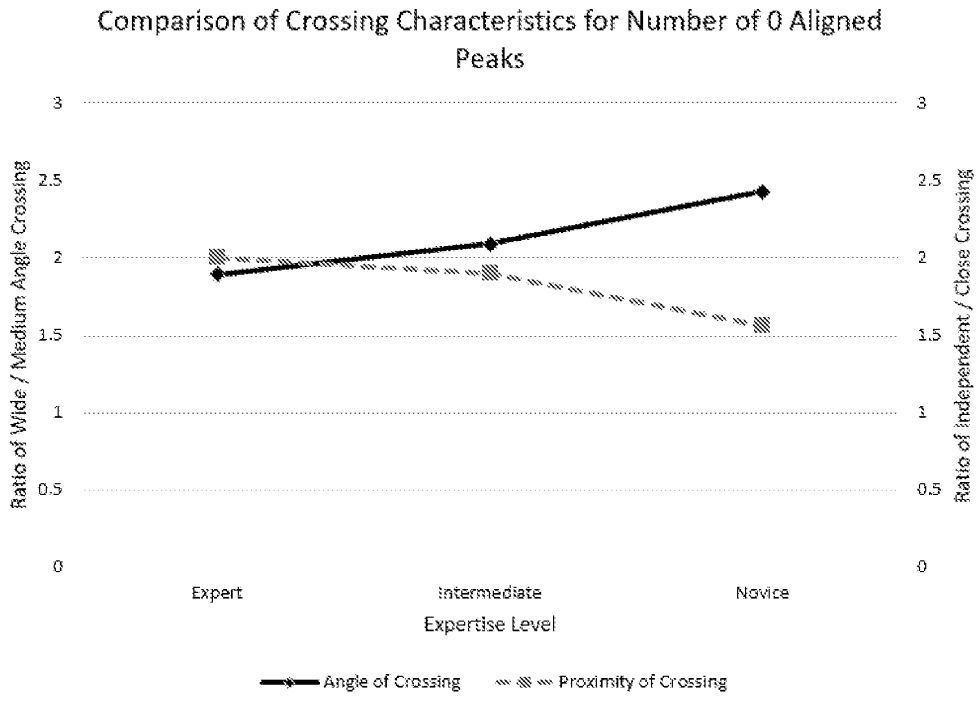

Comparison of Crossing Characteristics for Number of 0 Aligned Peaks
Ratio of Wide / Medium Angle Crossing
Ratio of independent / Close Crossing
3
2.5
2
1.5
1
0.5
0
Expert
Intermediate
Novice
Expertise Level
Angle of Crossing
Proximity of Crossing

FIG. 27