**LUCAS KANADE HOMEWORK 3**

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1.1 a)

Taking derivative w.r.t p:

* 1. b)

A is the steepest gradient of the images

b is the error image

* 1. c)

To minimize :

1.2

Text

Description automatically generated

1.3

testCarSequence.py Results:

A picture containing white

Description automatically generated Frame 1 Frame 100 Frame 200





Frame 300 Frame 400

testGirlSequence.py Results:

A picture containing outdoor, person

Description automatically generatedA picture containing outdoor, person, bicycle

Description automatically generatedA picture containing outdoor, person

Description automatically generated Frame 1 Frame 20 Frame 40

A picture containing outdoor

Description automatically generated

A person pushing a stroller

Description automatically generated with low confidence

Frame 60 Frame 80

1.4

testCarSequenceWithTemplateCorrection.py

A group of cars driving on a road

Description automatically generated with low confidence Frame 0 Frame 100 Frame 200

A picture containing text

Description automatically generated

Frame 300 Frame 400

testGirlSequenceWithTemplateCorrection.pyA picture containing outdoor, person

Description automatically generatedA group of people stand near each other

Description automatically generated with low confidenceA picture containing outdoor, person, skating, riding

Description automatically generated

Frame 0 Frame 20 Frame 40

A picture containing outdoor, sport

Description automatically generatedA picture containing outdoor, ground

Description automatically generated

Frame 60 Frame 80

2.1

Text

Description automatically generated

2.2

Text, chat or text message

Description automatically generated

2.3

testAntSequence.py

A picture containing bubble chart

Description automatically generated

A picture containing text

Description automatically generatedA picture containing text, indoor

Description automatically generated

Frame 30 Frame 60 Frame 90

A picture containing text, indoor

Description automatically generated

Frame 120

A picture containing text

Description automatically generatedA picture containing chart

Description automatically generatedtestAerialSequence.py

A picture containing chart

Description automatically generated Frame 30 Frame 60 Frame 90

A picture containing graphical user interface

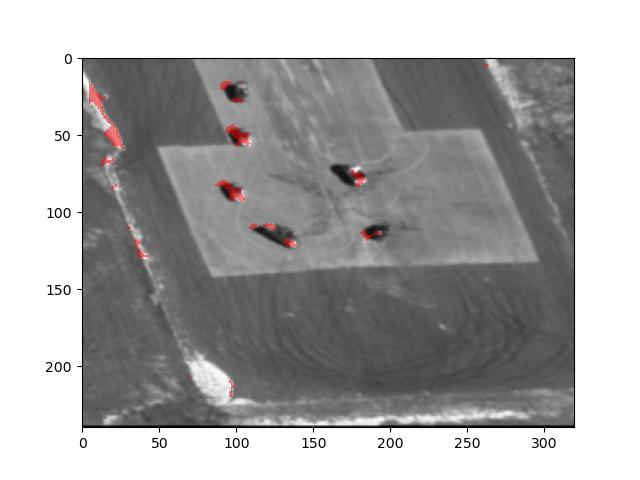
Description automatically generated

Frame 120

3.1

A picture containing chart

Description automatically generatedA picture containing text

Description automatically generatedtestAerialSequence.py (Inverse Composition)

Frame 30 Frame 60 Frame 90

A picture containing graphical user interface

Description automatically generated

Frame 120

A picture containing text

Description automatically generatedA picture containing bubble chart

Description automatically generatedtestAntSequence.py

A picture containing text, indoor

Description automatically generated Frame 30 Frame 60 Frame 90

A picture containing text, indoor

Description automatically generated

Frame 120

**ACKNOWLEDGEMENTS:**

1. My research lab mate Bassam Bikdash helped with Lucas Kanade Affine warp calculation for A matrix
2. Resources for Plotting image on image:
   1. <https://matplotlib.org/3.5.1/api/_as_gen/matplotlib.pyplot.imshow.html>
   2. <https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.plot.html>
   3. My research lab mate Bassam Bikdash

**ADDITIONAL HAND CALCS FOR REFERENCE:**

**Diagram, schematic

Description automatically generated**

**Text, letter

Description automatically generated**