SURAT KEPUTUSAN
REKTOR IIB DARMAJAYA
NOMOR : SK.008/DMJ/DFIK/BAAK/X-17
Tentang
Dosen Pembimbing Skripsi
Program Studi S1 Teknik Informatika

REKTOR IIB DARMAJAYA

Memperhatikan :
1. Bahwa dalam rangka usaha peningkatan mutu dan peranan IIB Darmajaya dalam melaksanakan Pendidikan Nasional perlu ditingkatkan kemampuan mahasiswa dalam **Skripsi.**
2. Laporan dan usulan Ketua Program Studi **S1 Teknik Informatika**.

Menimbang :
1. Bahwa untuk mengefektifkan tenaga pengajar dalam Skripsi mahasiswa perlu ditetapkan **Dosen Pembimbing Skripsi.**
2. Bahwa untuk maksud tersebut dipandang perlu menerbitkan Surat Keputusan Rektor.

Mengingat :
1. UU No.20 Tahun 2003 Tentang Sistem Pendidikan Nasional.
2. Peraturan Pemerintah No.60 Tahun 2010 tentang Pendidikan Sekolah Tinggi
3. Surat Keputusan Menteri Pendidikan Nasional Republik Indonesia No.165/D/0/2008 tertanggal 20 Agustus 2008 tentang Perubahan Status STMIK-STIE Darmajaya menjadi Informatics and Business Institute (IBI) Darmajaya
4. STATUTA IBI Darmajaya
5. Surat Ketua Yayasan Pendidikan Alfian Husin No. IM.003/YP-AH/X-08 tentang Persetujuan Perubahan Struktur Organisasi
6. Surat Keputusan Rektor 0383/DMJ/REK/X-08 tentang Struktur Organisasi.

Menetapkan

Pertama : Mengangkat nama-nama seperti tersebut dalam lampiran Surat Keputusan ini sebagai Dosen Pembimbing Skripsi mahasiswa Program Studi S1 Teknik Informatika.

Kedua : Pembimbing Skripsi berkewajiban melaksanakan tugasnya sesuai dengan jadwal yang telahditetapkan.

Ketiga : Pembimbing Skripsi yang ditunjuk akan diberikan honorarium yang besarnya sesuai dengan ketentuan peraturan dan norma penggajian dan honorarium IBIDarmajaya.

Keempat : Surat Keputusan ini berlaku sejak tanggal ditetap kan dan apabila dikemudian hari terdapat kekeliruan dalam keputusan ini, maka keputusan ini akan ditinjau kembali.

Ditetapkan di : Bandar Lampung
Pada tanggal : 24 Oktober 2017
a.n. Institut Informatika & Bisnis Darmajaya,
Ketua Yayasan Pendidikan Ilmu Komputer

[illegible] M.M.

1. Kabiro. SDM
2. Ketua Jurusan S1 Teknik Informatika
3. Yang bersangkutan
4. Arsip

Format Pembimbing Penulisan Skripsi
Program Studi Strata Satu (S1) Teknik Informatika

JUDUL SKRIPSI DAN DOSEN PEMBIMBING
PROGRAM STUDI STRATA SATU (S1) TEKNIK INFORMATIKA

No	NAMA	NPM	JUDUL	PEMBIMBING
1	1211019009	Tri Agung Budiantoro	Aplikasi Pengaman Panggilan Suara (Voice Call) WiFi Talkie Pada Topologi Mobile Ad Hoc Network (Manet) Dengan Algoritma Stream Cipher Rabbit	Yuni Arkhiansyah, M.Kom
2	1411010041	Putri Ayu Wulandari	Penerapan Algoritma Naïve Bayes Untuk Memprediksi Mahasiswa yang Beresiko Mendapatkan Status Drop Out (Studi Kasus: Perguruan Tinggi IIB Darmajaya)	
3	1111010019	Eka Putra Satria	Rancang Bangun Aplikasi Penilaian Admin Berbasis Android Pada PT Solid Gold Berjangka Lampung	
4	1411010080	Rasikun	Aplikasi Perhitungan Key Performance Indicators (KPI) Jurusan Berbasis Website Pada Institut Informatika dan Bisnis Darmajaya Bandar Lampung	
5	1411010004	Yustinus Ricky Dharmawan	Implementasi Algoritma C45 Dalam Menentukan Minat Bakat Mahasiswa Terhadap Organisasi Kegitan Pada IIB Darmajaya	Yulmaini, S.Kom, M.Cs
6	1411010024	Teddy Pratama	Implementasi Algoritma Naïve Bayes Dalam Menentukan Konsentrasi Skripsi dan Rekomendasi Bahasa Pemrograman	
7	1411010058	Fariz Arif Rahman	Implementasi Metode Case Based Reasoning Untuk Diagnosa Penyakit Maag Berbasis Website	
8	1411010072	Hendra Gunawan	Implementasi Metode Case Based Reasoning Untuk Mendiagnosa Penyakit Kelamin	
9	1411010094	Trianto	Aplikasi Audit Sistem Informasi Akademik Institut Informatika dan Bisnis (IIB) Darmajaya Lampung Menggunakan FrameWork COBIT 5	Nisar, S.Kom, M.T
10	1411010114	Indra Wijaya	Aplikasi Sistem Pakar Diagnosa Menentukan Kerusakan Pada Peralatan Rumah Tangga dengan Metode Certainty Factor	
11	1311010060	Angga Wahyudi	Aplikasi Android Dengan Algoritma C45 Untuk Menentukan Lama Panen Udang	Isnandar Agus, M.Kom
12	1411010118	Neneng Yuliani	Rancang Bangun Aplikasi Pembelajaraan Audit Teknologi Informasi Berbasis Android	Amnah, S.Kom, M.T.I
13	1411010101	Rama Dwiprasetya	Sistem Pendeteksian Kepadatan Kendaraan Menggunakan Metode Background Substraction	Apri Triansah, S.Kom, M.T.I
14	1411010037	Kurnia Oktavian	Penerapan Algoritma Dijkstra dalam Pencarian Lokasi Terdekat untuk Pet Shop Pada Provinsi Lampung Berbasis Android	
15	1211010042	Rizki Hapar Hastantyo	Sistem Pencegahan Flooding Data Pada Jaringan Komputer Di IBI Darmajaya Bandar Lampung	

Yayasan Pendidikan Alfian Husin
INFORMATICS & BUSINESS INSTITUTE
DARMAJAYA
Bandar Lampung | D.h. STMIK - STIE DARMAJAYA

ibi INFORMATICS & BUSINESS INSTITUTE DARMAJAYA

BIRO ADMINISTRASI AKADEMIK KEMAHASISWAAN (BAAK)

FORM KONSULTASI/BIMBINGAN SKRIPSI/TUGAS AKHIR *)

NAMA : RAMA DWI PRASETIA
NPM : 1411010101
PEMBIMBING I : APRI TIANSYAH S.Kom.M.T.I
PEMBIMBING II :
JUDUL LAPORAN : Sistem Pendeteksian Kepadatan Kendaraan Menggunakan Metode Background Substraction
TANGGAL SK : .... s.d .... (6+2 bulan)

No	HARI/TANGGAL	HASIL KONSULTASI	PARAF
1	01/Januari 2018	Bimbingan Bab 1 & 2	(paraf)
2	03/Januari 2018	Bab 1 & 2 Revisi	(paraf)
3	08/Januari 2018	Bab 1 & 2 Acc	(paraf)
4	10/Januari 2018	Bimbingan Bab 3 Revisi	(paraf)
5	15/Januari 2018	Bimbingan Bab 3 Acc	(paraf)
6	~~17~~ 01/Februari 2018	Bimbingan Bab 4 & Program	(paraf)
7	02/Februari 2018	Bimbingan Bab 4 & Program Revisi	(paraf)
8	07/Februari 2018	Acc Sidang	(paraf)
9			
10			

*) Coret yang tidak perlu

Bandar Lampung, 09 Februari 2018
Ketua Jurusan

(tanda tangan)

Yuni Arkhiansyah, S.Kom., M.Kom
NIK. 00480802

Bandar Lampung, 18 Desember 2017

Nomor : Penelitian.015/DMJ/DEKAN/BAAK/XII-17
Lampiran : -
Perihal : Permohonan Izin Penelitian

Kepada Yth,

Dinas Perhubungan
Di -
Jl. Cut Meutia No.76 Teluk Betung, Bandar Lampung 35215

Dengan hormat,

Sehubungan dengan peraturan Akademik Institut Informatika dan Bisnis (IIB) bahwa mahasiswa/i Strata Satu (S1) yang akan menyelesaikan studinya diwajibkan untuk memiliki pengalaman kerja dengan melaksanakan Penelitian dan membuat laporan yang waktunya disesuaikan dengan kalender Informatic & Business Institute (IBI) Darmajaya.

Untuk itu kami mohon kerja sama Bapak/Ibu agar kiranya dapat menerima mahasiswa/i untuk melakukan Penelitian, yang pelaksanaannya dimulai dari tanggal **18 Desember 2017 s.d 28 Februari 2018** (selama dua bulan satu minggu)

Adapun mahasiswa/i tersebut adalah :

Nama	**: Rama Dwiprasetia**
NPM	**: 1411010101**
Jurusan	**: S1 Teknik Informatika**
Jenjang	**: Strata Satu (S1)**
Judul	**: Sistem Pendeteksi Kepadatan Kendaraan Menggunakan Backgrond Substraction**

Demikian permohonan ini dibuat, atas perhatian dan kerjasama yang baik kami ucapkan terimakasih.

Dekan
Fakultas Ilmu Komputer,

Sriyanto, S.Kom., MM
NIK. 00210800

Tembusan:
1. Jurusan S1 Teknik Informatika
2. Arsip.

Lampiran 1 :

```
Option Explicit On      'require explicit declaration of
variables, this is NOT Python !!
Option Strict On        'restrict implicit data type
conversions to only widening conversions


Imports Emgu.CV                 '
Imports Emgu.CV.CvEnum          'usual Emgu Cv imports
Imports Emgu.CV.Structure       '
Imports Emgu.CV.UI              '
Imports Emgu.CV.Util


Public Class frmMain




    ' member variables
    Dim SCALAR_BLACK As New MCvScalar(0.0, 0.0, 0.0)
    Dim SCALAR_WHITE As New MCvScalar(255.0, 255.0, 255.0)
    Dim SCALAR_BLUE As New MCvScalar(255.0, 0.0, 0.0)
    Dim SCALAR_GREEN As New MCvScalar(0.0, 200.0, 0.0)
    Dim SCALAR_RED As New MCvScalar(0.0, 0.0, 255.0)

    Dim capVideo As VideoCapture

    Dim blnFormClosing As Boolean = False
```

```
    Private Sub frmMain_FormClosing(sender As Object, e As
FormClosingEventArgs) Handles MyBase.FormClosing

        blnFormClosing = True

        CvInvoke.DestroyAllWindows()

    End Sub



    Private Sub btnOpenFile_Click(sender As Object, e As
EventArgs) Handles btnOpenFile.Click


        Dim drChosenFile As DialogResult


        drChosenFile = openFileDialog.ShowDialog()
'open file dialog


        If (drChosenFile <> DialogResult.OK Or
openFileDialog.FileName = "") Then    'if user chose Cancel
or filename is blank . . .

            lblChosenFile.Text = "file not chosen"
'show error message on label

            Return
'and exit function

        End If


        Try
```

```
            capVideo = New
VideoCapture(openFileDialog.FileName)        'attempt to
open chosen video file

        Catch ex As Exception
'catch error if unsuccessful

            'show error via message box

            MessageBox.Show("unable to read video file,
error: " + ex.Message)

            Return

        End Try


        lblChosenFile.Text = openFileDialog.FileName


        If (capVideo Is Nothing) Then

            txtInfo.AppendText("unable to read video file")

        End If


        If (capVideo.GetCaptureProperty(CapProp.FrameCount)
< 2) Then               'check and make sure the video has
at least 2 frames

            txtInfo.AppendText("error: video file must have
at least two frames")

        End If


        trackBlobsAndUpdateGUI()


    End Sub
```

```
    Sub trackBlobsAndUpdateGUI()

        Dim imgFrame1 As Mat
        Dim imgFrame2 As Mat

        Dim blobs As New List(Of Blob)

        Dim crossingLine(2) As Point

        Dim carCount As Integer = 0

        imgFrame1 = capVideo.QueryFrame()
        imgFrame2 = capVideo.QueryFrame()

        Dim horizontalLinePosition As Integer =
CInt(Math.Round(CDbl(imgFrame1.Rows()) * 0.35)) 'nentuin
posisi dimana garisnya

        crossingLine(0).X = 0
        crossingLine(0).Y = horizontalLinePosition

        crossingLine(1).X = imgFrame1.Cols() - 1
        crossingLine(1).Y = horizontalLinePosition

        Dim blnFirstFrame As Boolean = True

        While (blnFormClosing = False)
```

```
            Dim currentFrameBlobs As New List(Of Blob)


            Dim imgFrame1Copy As Mat = imgFrame1.Clone()
            Dim imgFrame2Copy As Mat = imgFrame2.Clone()


            Dim imgDifference As New Mat(imgFrame1.Size,
DepthType.Cv8U, 1)
            Dim imgThresh As New Mat(imgFrame1.Size,
DepthType.Cv8U, 1)


            CvInvoke.CvtColor(imgFrame1Copy, imgFrame1Copy,
ColorConversion.Bgr2Gray)
            CvInvoke.CvtColor(imgFrame2Copy, imgFrame2Copy,
ColorConversion.Bgr2Gray)


            CvInvoke.GaussianBlur(imgFrame1Copy,
imgFrame1Copy, New Size(5, 5), 0)
            CvInvoke.GaussianBlur(imgFrame2Copy,
imgFrame2Copy, New Size(5, 5), 0)


            CvInvoke.AbsDiff(imgFrame1Copy, imgFrame2Copy,
imgDifference)


            CvInvoke.Threshold(imgDifference, imgThresh, 30,
255.0, ThresholdType.Binary)


            CvInvoke.Imshow("imgThresh", imgThresh)


            Dim structuringElement3x3 As Mat =
CvInvoke.GetStructuringElement(ElementShape.Rectangle, New
Size(3, 3), New Point(-1, -1))
```

```
            Dim structuringElement5x5 As Mat =
CvInvoke.GetStructuringElement(ElementShape.Rectangle, New
Size(5, 5), New Point(-1, -1))


            Dim structuringElement7x7 As Mat =
CvInvoke.GetStructuringElement(ElementShape.Rectangle, New
Size(7, 7), New Point(-1, -1))
            Dim structuringElement9x9 As Mat =
CvInvoke.GetStructuringElement(ElementShape.Rectangle, New
Size(9, 9), New Point(-1, -1))


            For i As Integer = 0 To 1
                CvInvoke.Dilate(imgThresh, imgThresh,
structuringElement5x5, New Point(-1, -1), 1,
BorderType.Default, New MCvScalar(0, 0, 0))
                CvInvoke.Dilate(imgThresh, imgThresh,
structuringElement5x5, New Point(-1, -1), 1,
BorderType.Default, New MCvScalar(0, 0, 0))
                CvInvoke.Erode(imgThresh, imgThresh,
structuringElement5x5, New Point(-1, -1), 1,
BorderType.Default, New MCvScalar(0, 0, 0))
            Next


            Dim imgThreshCopy As Mat = imgThresh.Clone()


            Dim contours As New VectorOfVectorOfPoint()


            CvInvoke.FindContours(imgThreshCopy, contours,
Nothing, RetrType.External,
ChainApproxMethod.ChainApproxSimple)


            drawAndShowContours(imgThresh.Size(), contours,
"imgContours")
```

```
            Dim convexHulls As New
VectorOfVectorOfPoint(contours.Size())

            For i As Integer = 0 To contours.Size() - 1
                CvInvoke.ConvexHull(contours(i),
convexHulls(i))
            Next

            drawAndShowContours(imgThresh.Size(),
convexHulls, "imgConvexHulls")

            For i As Integer = 0 To contours.Size() - 1

                Dim possibleBlob As New Blob(convexHulls(i))

                If (possibleBlob.intCurrentRectArea > 400
And _
                    possibleBlob.dblCurrentAspectRatio > 0.2
And _
                    possibleBlob.dblCurrentAspectRatio < 4.0
And _
                    possibleBlob.currentBoundingRect.Width >
30 And _
                    possibleBlob.currentBoundingRect.Height
> 30 And _
                    possibleBlob.dblCurrentDiagonalSize >
60.0 And _
(CvInvoke.ContourArea(possibleBlob.currentContour) /
possibleBlob.intCurrentRectArea) > 0.5) Then

                    currentFrameBlobs.Add(possibleBlob)
                End If
```

```
            Next

            drawAndShowContours(imgThresh.Size(),
currentFrameBlobs, "imgCurrentFrameBlobs")

            If (blnFirstFrame = True) Then
                For Each currentFrameBlob As Blob In
currentFrameBlobs
                    blobs.Add(currentFrameBlob)
                Next
            Else
                matchCurrentFrameBlobsToExistingBlobs(blobs,
currentFrameBlobs)
            End If

            drawAndShowContours(imgThresh.Size(), blobs,
"imgBlobs")

            imgFrame2Copy = imgFrame2.Clone()

            drawBlobInfoOnImage(blobs, imgFrame2Copy)

            Dim atLeastOneBlobCrossedTheLine =
checkIfBlobsCrossedTheLine(blobs, horizontalLinePosition,
carCount)

            If (atLeastOneBlobCrossedTheLine) Then

                CvInvoke.Line(imgFrame2Copy,
crossingLine(0), crossingLine(1), SCALAR_GREEN, 2)
```

```
            Else

                CvInvoke.Line(imgFrame2Copy,
crossingLine(0), crossingLine(1), SCALAR_RED, 2)

            End If


            drawCarCountOnImage(carCount, imgFrame2Copy)


            imageBox.Image = imgFrame2Copy


            'now we prepare for the next iteration


            currentFrameBlobs.Clear()


            imgFrame1 = imgFrame2.Clone()
'move frame 1 up to where frame 2 is


            If
(capVideo.GetCaptureProperty(CapProp.PosFrames) + 1 <
capVideo.GetCaptureProperty(CapProp.FrameCount)) Then
'if there is at least one more frame

                imgFrame2 = capVideo.QueryFrame()
'get the next frame

            Else
'else if there is not at least one more frame

                txtInfo.AppendText("end of video")
'show end of video message


                Exit While
'and jump out of while loop

            End If

            blnFirstFrame = False
```

```
            Application.DoEvents()


        End While

    End Sub



    Sub matchCurrentFrameBlobsToExistingBlobs(ByRef
existingBlobs As List(Of Blob), ByRef currentFrameBlobs As
List(Of Blob))


        For Each existingBlob As Blob In existingBlobs

            existingBlob.blnCurrentMatchFoundOrNewBlob =
False

            existingBlob.predictNextPosition()

        Next


        For Each currentFrameBlob As Blob In
currentFrameBlobs


            Dim intIndexOfLeastDistance As Integer = 0

            Dim dblLeastDistance As Double = 1000000.0


            For i As Integer = 0 To existingBlobs.Count() -
1


                If (existingBlobs(i).blnStillBeingTracked =
True) Then
```

```
                    Dim dblDistance As Double =
distanceBetweenPoints(currentFrameBlob.centerPositions.Last(
), existingBlobs(i).predictedNextPosition)

                    If (dblDistance < dblLeastDistance) Then
                        dblLeastDistance = dblDistance
                        intIndexOfLeastDistance = i
                    End If

                End If

            Next

            If (dblLeastDistance <
currentFrameBlob.dblCurrentDiagonalSize * 0.5) Then
                addBlobToExistingBlobs(currentFrameBlob,
existingBlobs, intIndexOfLeastDistance)
            Else
                addNewBlob(currentFrameBlob, existingBlobs)
            End If

        Next

        For Each existingBlob As Blob In existingBlobs

            If (existingBlob.blnCurrentMatchFoundOrNewBlob =
False) Then

existingBlob.intNumOfConsecutiveFramesWithoutAMatch =
existingBlob.intNumOfConsecutiveFramesWithoutAMatch + 1
```

```
            End If


            If
(existingBlob.intNumOfConsecutiveFramesWithoutAMatch >= 5)
Then

                existingBlob.blnStillBeingTracked = False

            End If


        Next


    End Sub


    Sub addBlobToExistingBlobs(ByRef currentFrameBlob As
Blob, ByRef existingBlobs As List(Of Blob), ByRef intIndex
As Integer)


        existingBlobs(intIndex).currentContour =
currentFrameBlob.currentContour

        existingBlobs(intIndex).currentBoundingRect =
currentFrameBlob.currentBoundingRect



existingBlobs(intIndex).centerPositions.Add(currentFrameBlob
.centerPositions.Last())




       existingBlobs(intIndex).dblCurrentDiagonalSize =
currentFrameBlob.dblCurrentDiagonalSize

        existingBlobs(intIndex).dblCurrentAspectRatio =
currentFrameBlob.dblCurrentAspectRatio
```

```
        existingBlobs(intIndex).blnStillBeingTracked = True

existingBlobs(intIndex).blnCurrentMatchFoundOrNewBlob = True

    End Sub

    Sub addNewBlob(ByRef currentFrameBlob As Blob, ByRef
existingBlobs As List(Of Blob))

        currentFrameBlob.blnCurrentMatchFoundOrNewBlob =
True

        existingBlobs.Add(currentFrameBlob)

    End Sub

    Function distanceBetweenPoints(point1 As Point, point2
As Point) As Double









        Dim intX As Integer = Math.Abs(point1.X - point2.X)
        Dim intY As Integer = Math.Abs(point1.Y - point2.Y)

        Return Math.Sqrt((intX ^ 2) + (intY ^ 2))
```

```
    End Function

    Sub drawAndShowContours(imageSize As Size, contours As
VectorOfVectorOfPoint, strImageName As String)

        Dim image As New Mat(imageSize, DepthType.Cv8U, 3)

        CvInvoke.DrawContours(image, contours, -1,
SCALAR_WHITE, -1)

        CvInvoke.Imshow(strImageName, image)

    End Sub

    Sub drawAndShowContours(imageSize As Size, blobs As
List(Of Blob), strImageName As String)

        Dim image As New Mat(imageSize, DepthType.Cv8U, 3)

        Dim contours As New VectorOfVectorOfPoint()

        For Each blob As Blob In blobs
            If (blob.blnStillBeingTracked = True) Then
                contours.Push(blob.currentContour)
```

```
            End If
        Next

        CvInvoke.DrawContours(image, contours, -1,
SCALAR_WHITE, -1)

        CvInvoke.Imshow(strImageName, image)

    End Sub

    Function checkIfBlobsCrossedTheLine(ByRef blobs As
List(Of Blob), ByRef horizontalLinePosition As Integer,
ByRef carCount As Integer) As Boolean

        Dim atLeastOneBlobCrossedTheLine As Boolean = False
'this will be the return value

        For Each blob As Blob In blobs 'ngitung mobilnya

            If (blob.blnStillBeingTracked = True And
blob.centerPositions.Count() >= 2) Then



                Dim prevFrameIndex As Integer =
blob.centerPositions.Count() - 2
                Dim currFrameIndex As Integer =
blob.centerPositions.Count() - 1

                If (blob.centerPositions(prevFrameIndex).Y >
horizontalLinePosition And
blob.centerPositions(currFrameIndex).Y <=
horizontalLinePosition) Then
```

```
                    carCount = carCount + 1

                    atLeastOneBlobCrossedTheLine = True
                End If

            End If

            TextBox1.Text = carCount.ToString()

            If carCount > 20 Then
                TextBox2.Text = "Padat"
            Else
                TextBox2.Text = "Tidak Padat"
            End If
        Next

        Return (atLeastOneBlobCrossedTheLine)

    End Function



    Sub drawBlobInfoOnImage(ByRef blobs As List(Of Blob),
ByRef imgFrame2Copy As Mat)

        For i As Integer = 0 To blobs.Count - 1

            If (blobs(i).blnStillBeingTracked = True) Then

                CvInvoke.Rectangle(imgFrame2Copy,
blobs(i).currentBoundingRect, SCALAR_RED, 2)
```

```
                Dim fontFace As FontFace =
FontFace.HersheySimplex

                Dim dblFontScale As Double =
blobs(i).dblCurrentDiagonalSize / 60.0

                Dim intFontThickness As Integer =
CInt(Math.Round(dblFontScale * 1.0))


                CvInvoke.PutText(imgFrame2Copy,
i.ToString(), blobs(i).centerPositions.Last(), fontFace,
dblFontScale, SCALAR_GREEN, intFontThickness)


            End If


        Next


    End Sub




    Sub drawCarCountOnImage(ByRef carCount As Integer, ByRef
imgFrame2Copy As Mat)


        Dim fontFace As FontFace = FontFace.HersheySimplex

        Dim dblFontScale As Double =
CDbl(imgFrame2Copy.Rows() * imgFrame2Copy.Cols()) / 300000.0

        Dim intFontThickness As Integer =
CInt(Math.Round(dblFontScale * 1.5))
```

```
        Dim textSize As Size =
getTextSize(carCount.ToString(), fontFace, dblFontScale,
intFontThickness)


        Dim bottomLeftTextPosition As New Point()


        bottomLeftTextPosition.X = imgFrame2Copy.Cols - 1 -
CInt(CDbl(textSize.Width) * 1.3)
        bottomLeftTextPosition.Y =
CInt(CDbl(textSize.Height) * 1.3)


        CvInvoke.PutText(imgFrame2Copy, carCount.ToString(),
bottomLeftTextPosition, fontFace, dblFontScale,
SCALAR_GREEN, intFontThickness)


    End Sub




    Function getTextSize(strText As String, intFontFace As
Integer, dblFontScale As Double, intFontThickness As
Integer) As Size


        Dim textSize As New Size()              'this will
be the return value


        Dim intNumChars As Integer = strText.Count()


        textSize.Width = 55 * intNumChars
        textSize.Height = 65
```

```
        Return (textSize)


    End Function


    Private Sub frmMain_Load(sender As Object, e As
EventArgs) Handles MyBase.Load




    End Sub


    Private Sub openFileDialog_FileOk(sender As Object, e As
System.ComponentModel.CancelEventArgs) Handles
openFileDialog.FileOk


    End Sub




    Private Sub tableLayoutPanel_Paint(sender As Object, e
As PaintEventArgs) Handles tableLayoutPanel.Paint


    End Sub


    Private Sub SaveFileDialog1_FileOk(sender As Object, e
As System.ComponentModel.CancelEventArgs) Handles
SaveFileDialog.FileOk


    End Sub
```

```
    Private Sub Save_Click(sender As Object, e As EventArgs)
Handles Save.Click




        SaveFileDialog.ShowDialog()
        If (SaveFileDialog.FileName > "") Then
            imageBox.Image.Save(SaveFileDialog.FileName)


        End If









    End Sub


    Private Sub imageBox_Click(sender As Object, e As
EventArgs) Handles imageBox.Click


    End Sub
End Class
```