DBBT
Digital Broadcasting & Broadband Technologies

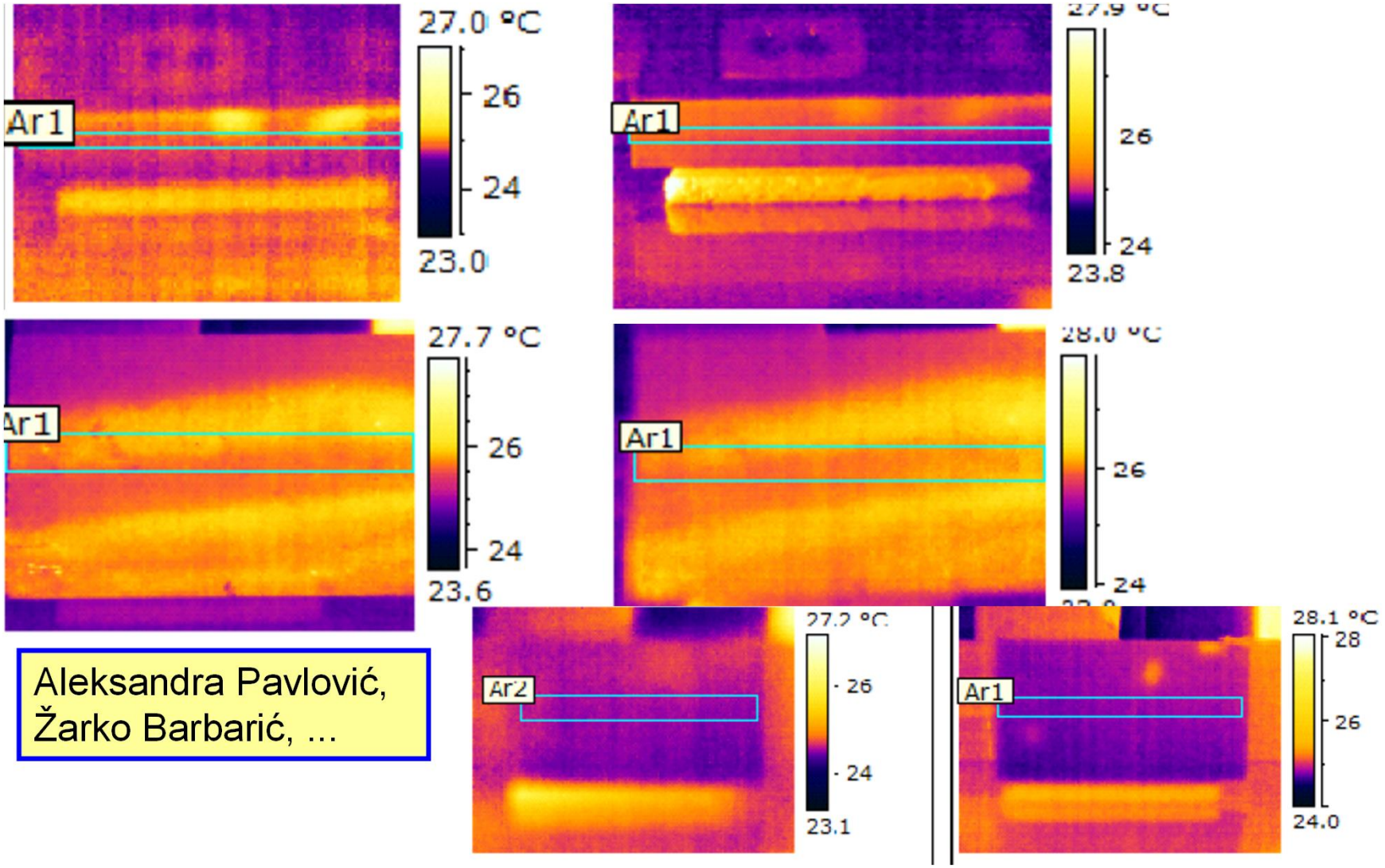
Co-funded by the Erasmus+ Programme of the European Union

Procesiranje signala

Profesor dr Miroslav Lutovac

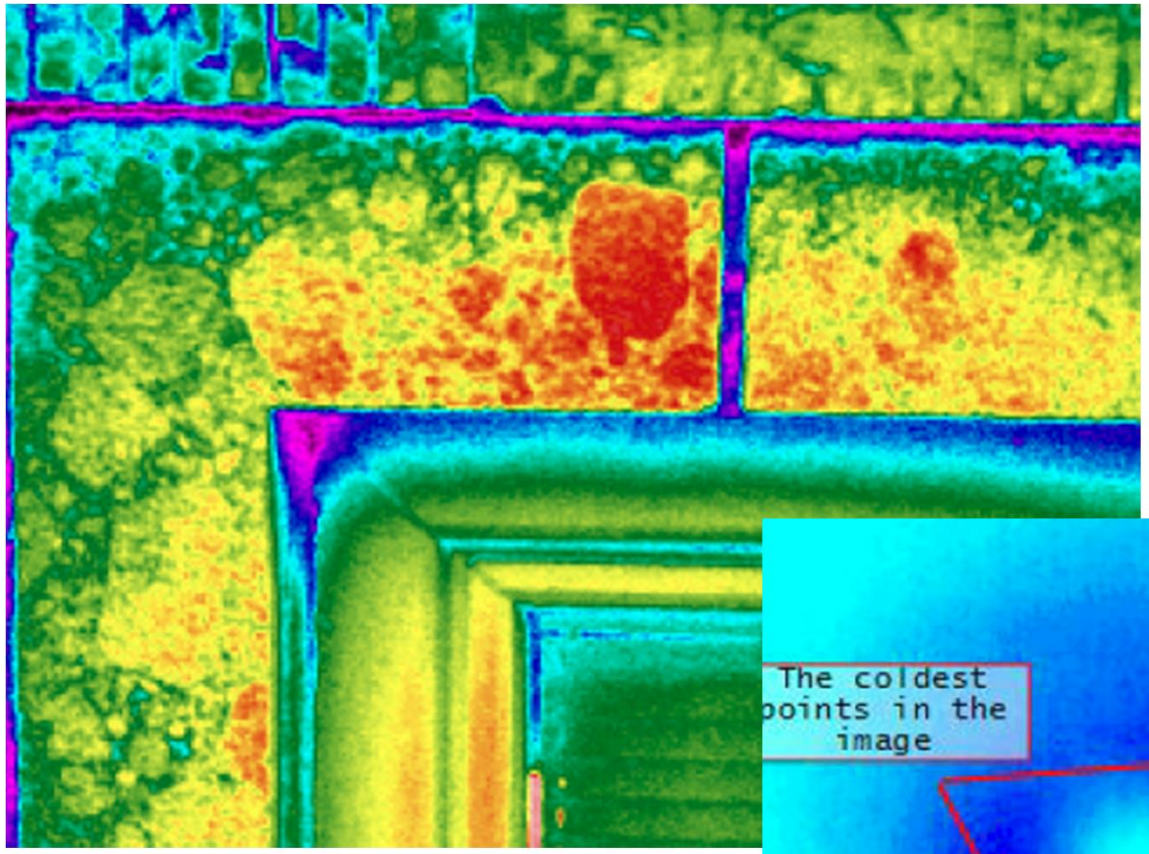
"This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

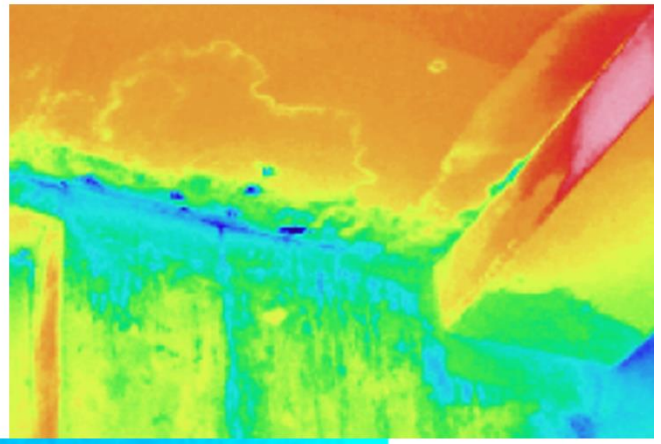
Impact of Emissivity and Reflectivity of the Object to Estimate Temperature Using Infrared Thermal Imaging Camera

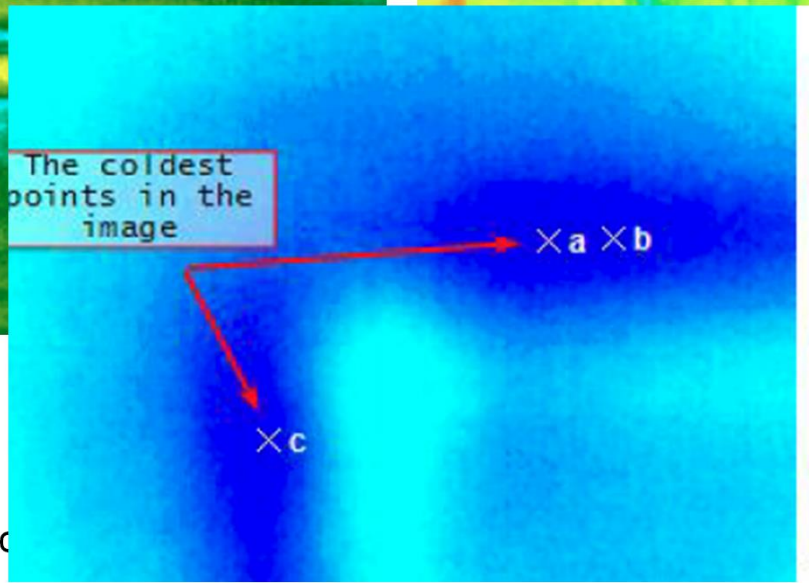


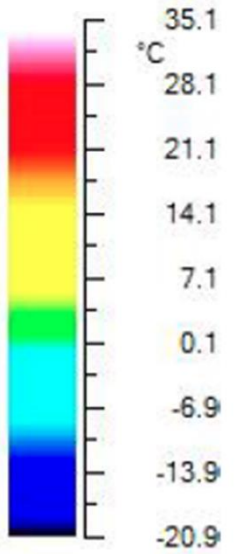
Aleksandra Pavlović,
Žarko Barbarić, ...

Application of G100/120 Thermal Imaging Camera in Energy Efficiency Measuring in Building Construction



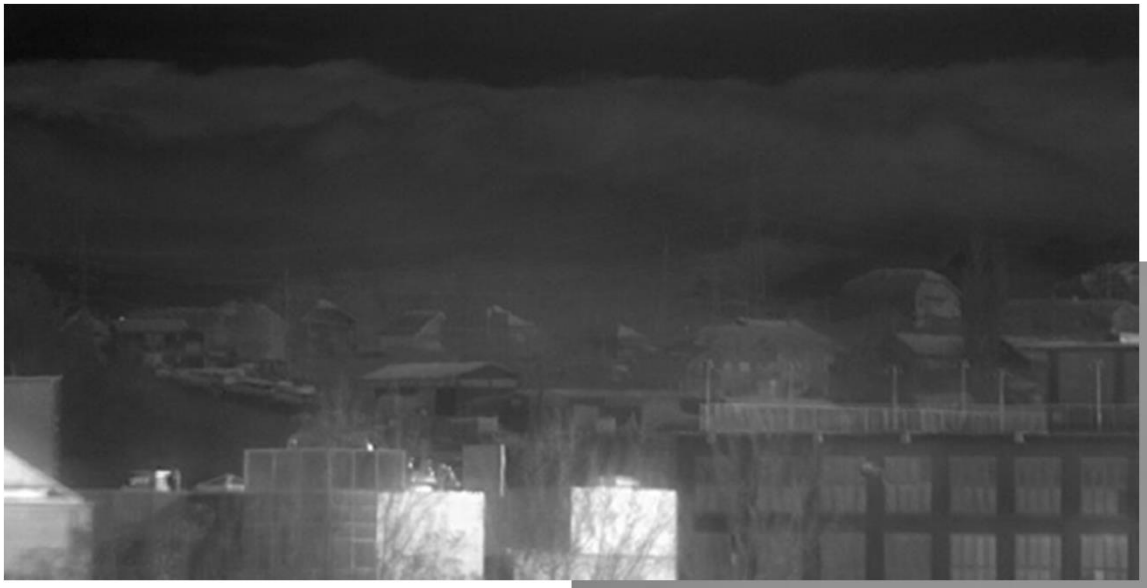






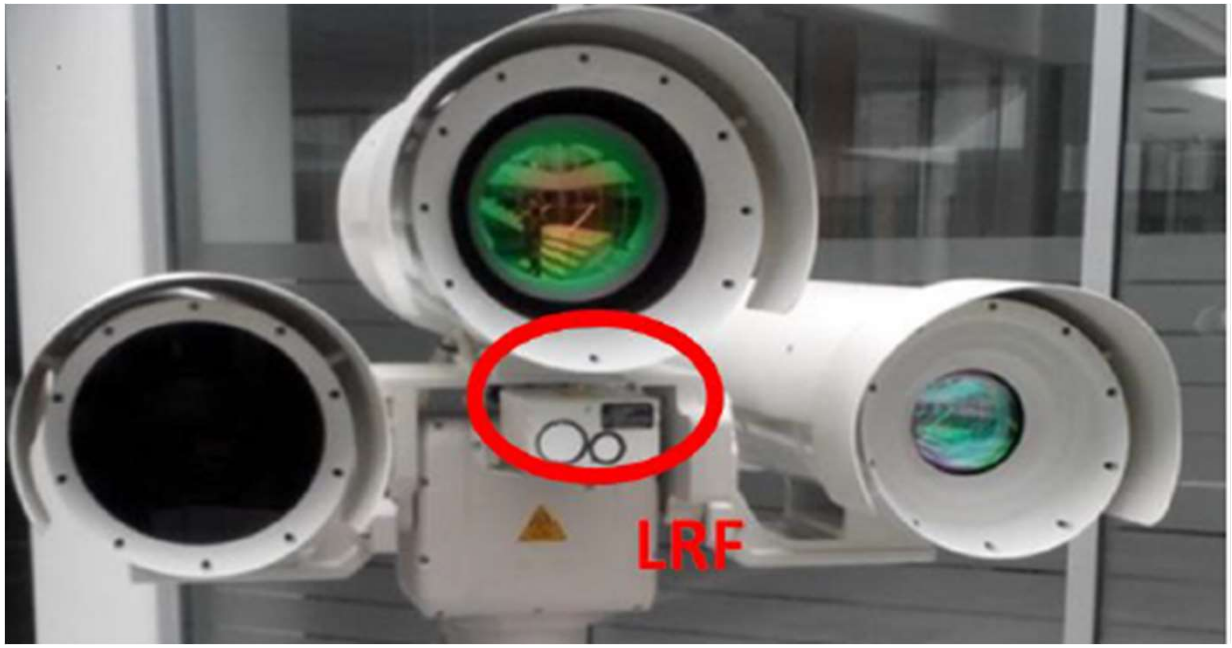
Proceedings of IcETRAN,
Aleksandra Pavlović,
Žarko Barbarić

Analysis of Short Wave Infrared Imagers Application in Electro-Optical Systems



Mid Wave Infrared
Long Wave Infrared

Challenges of Laser Range Finder Integration In Electro-Optical Surveillance System

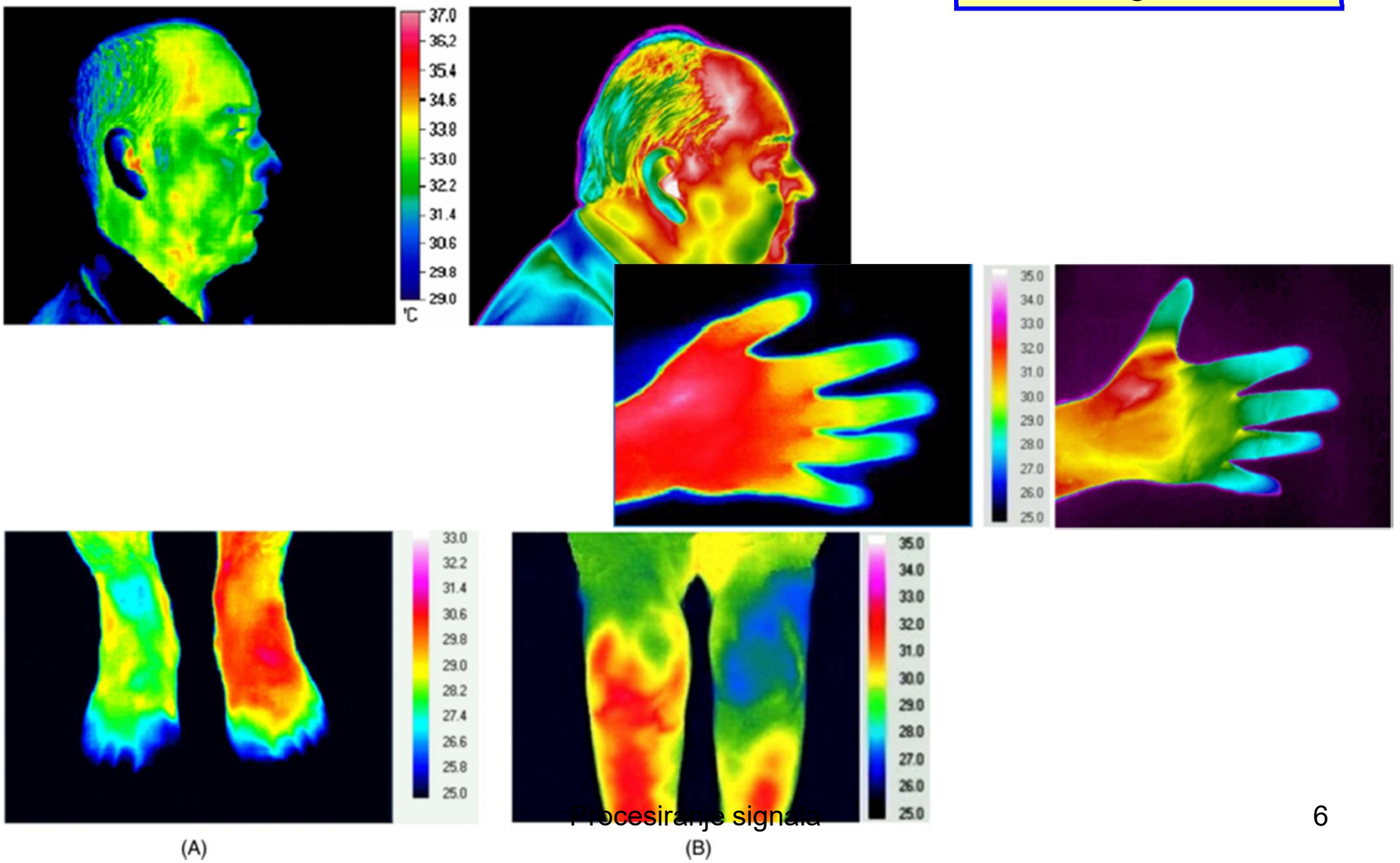


Proceedings of 4th International Conference on Electrical, Electronics and Computing Engineering, 2017, Kladovo, Serbia,

Branko Livada, Dragana Perić, Miroslav Perić

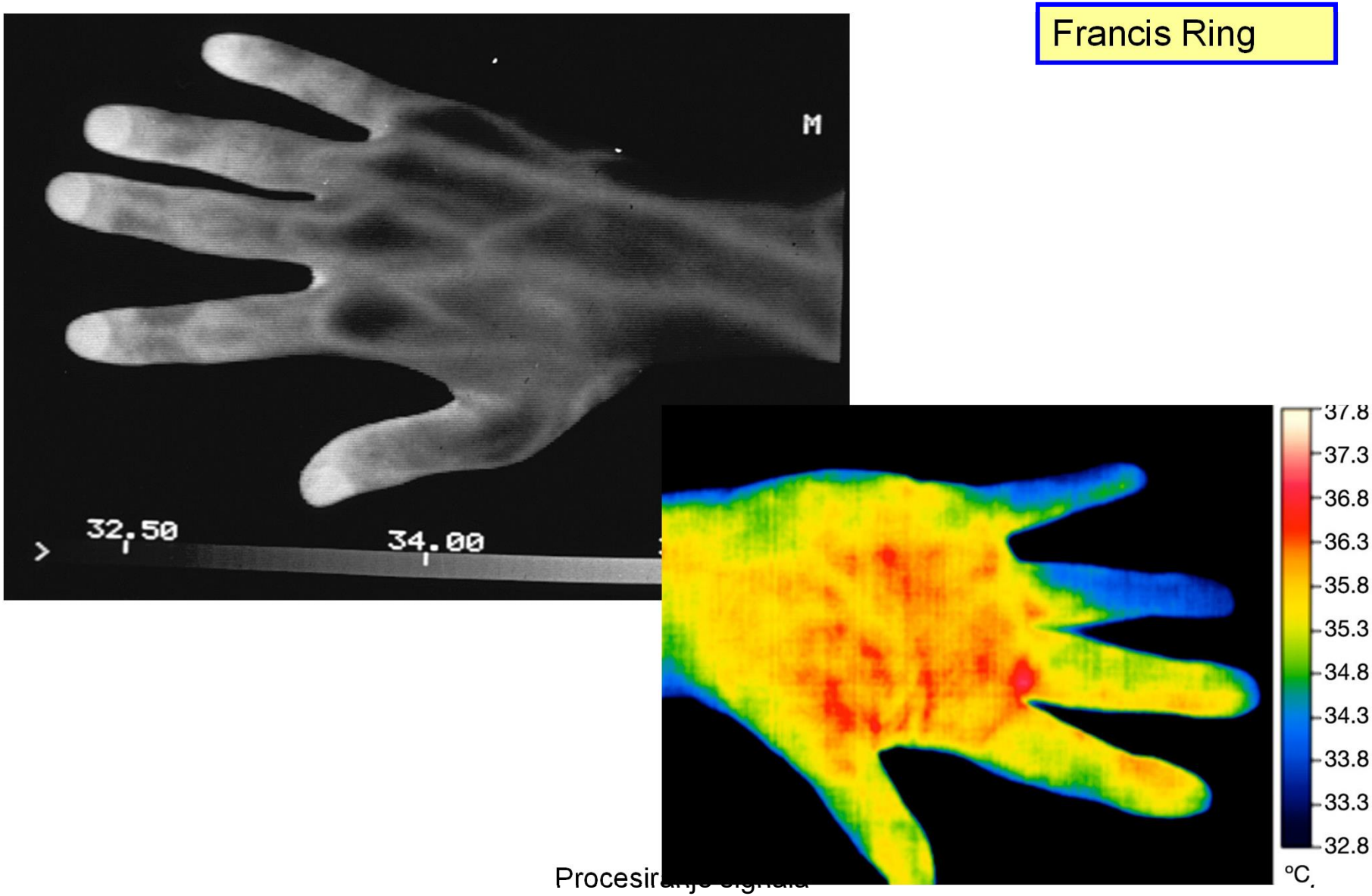
Infrared thermal imaging in medicine

E F J Ring, K Ammer



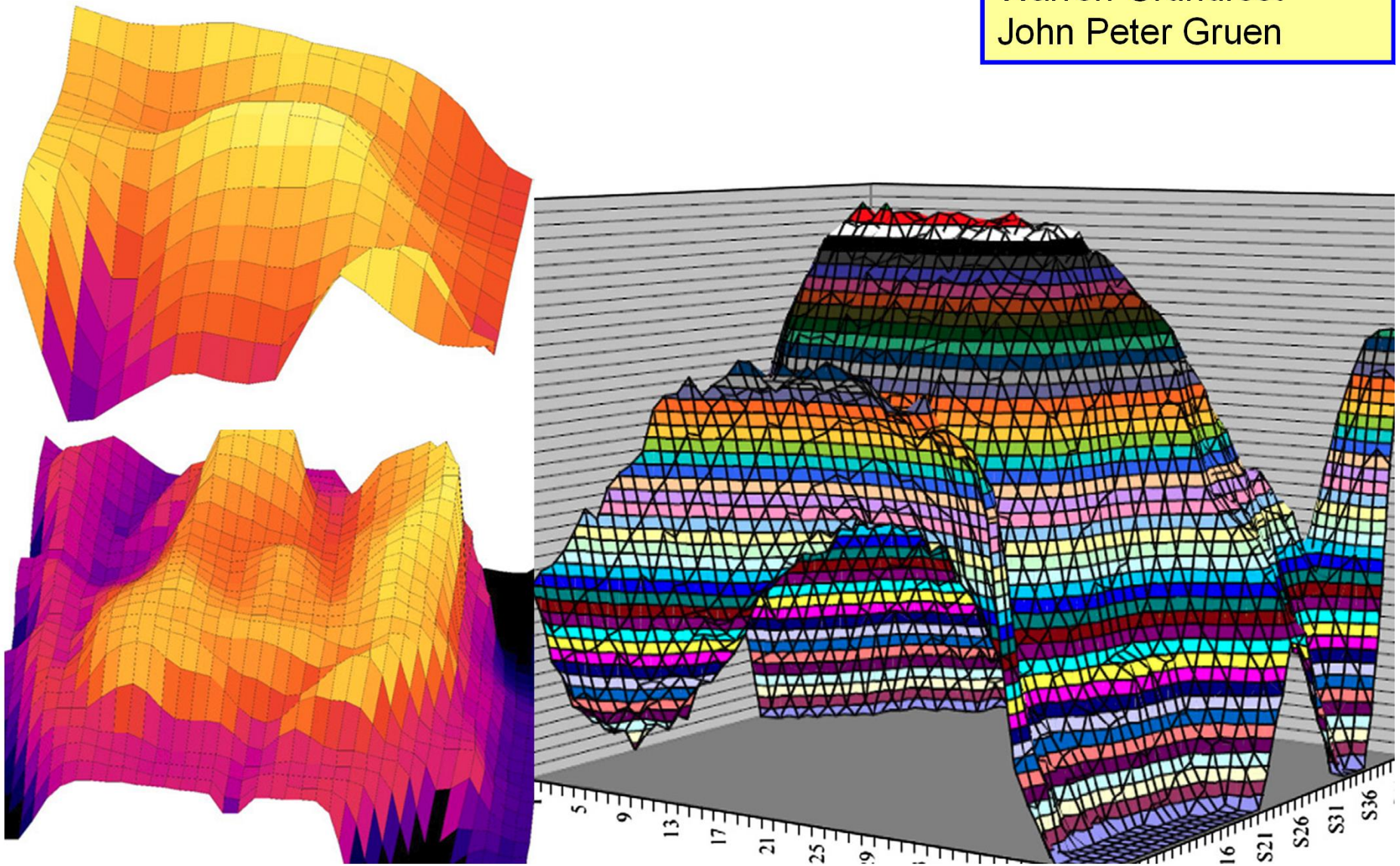
Thermal Imaging Today and Its Relevance to Diabetes

Francis Ring



Infrared thermal imaging:
A review of the literature and case report

Babak Kateb
Vicky Yamamoto
Cheng Yu
Warren Grundfest
John Peter Gruen



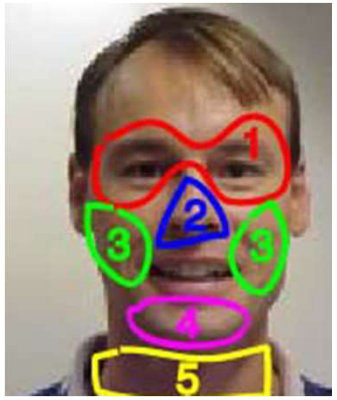
Applications of thermal imaging in food quality and safety assessment

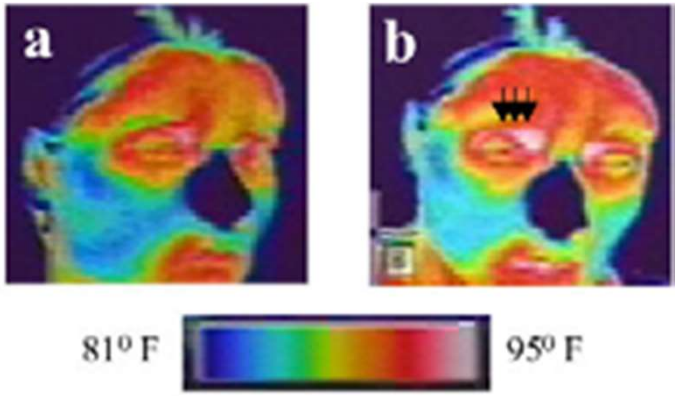
A. Gowen, B.Tiwari, P. Cullen, K. McDonnell1, C. O'Donnell

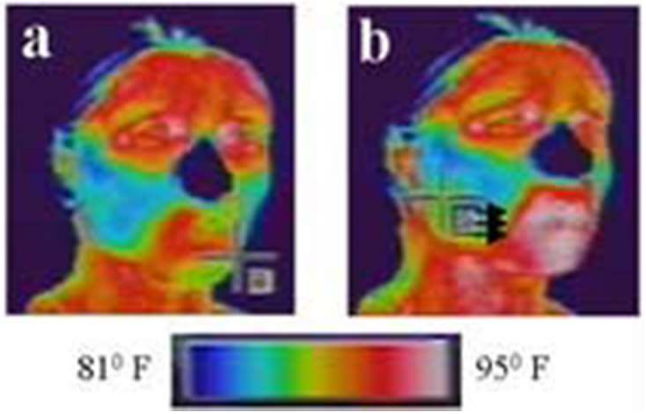
- Thermal imaging (TI) is an emerging, non invasive process analytical technique suitable for the food industry. While TI was originally developed for military applications, it has recently emerged as a powerful non-destructive measurement technique in other industries. This paper provides an overview of TI theory, equipment, and image processing. Recent advances and potential applications of TI for food safety and quality assessment such as temperature validation, bruise and foreign body detection and grain quality evaluation are reviewed.

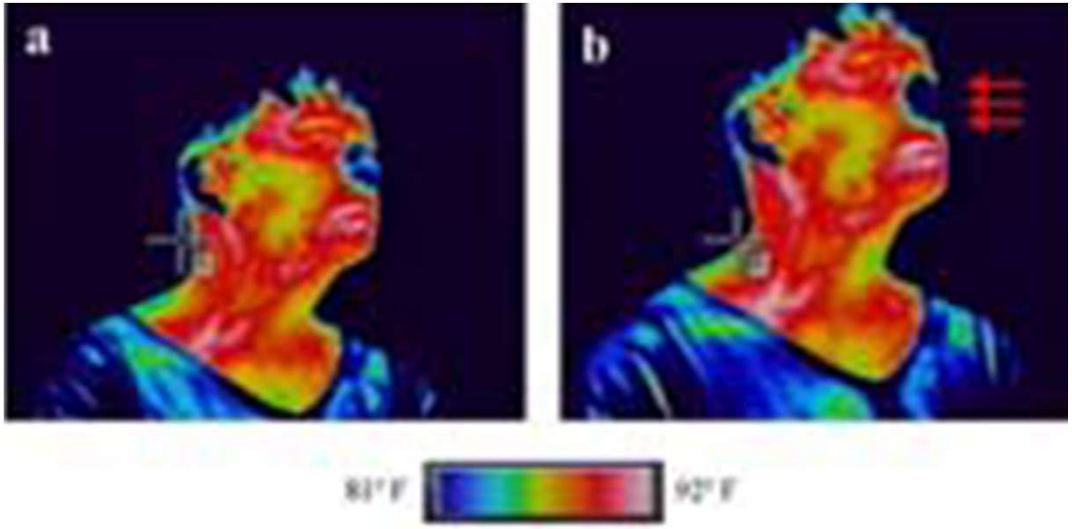
Thermal Imaging for Anxiety Detection

Ioannis Pavlidis
James Levine
Paulette Baukol



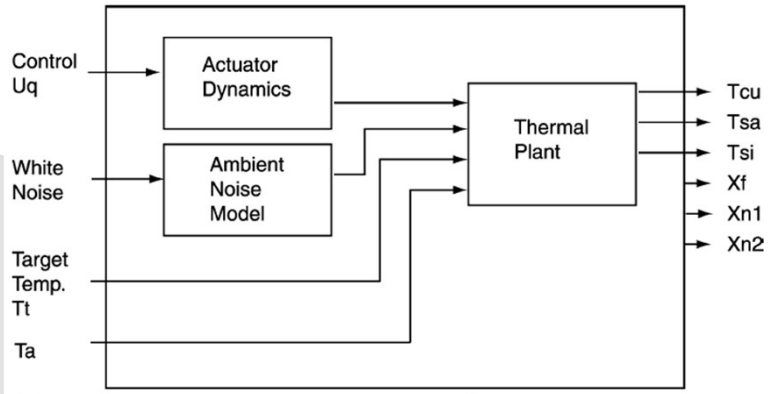


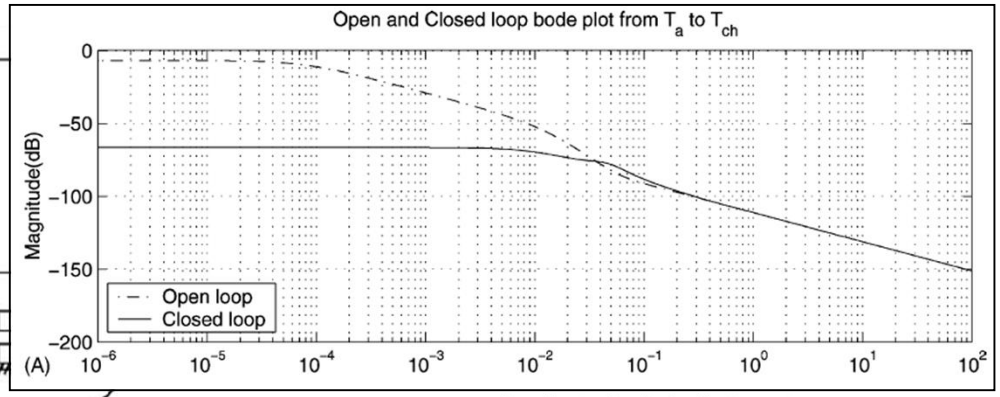


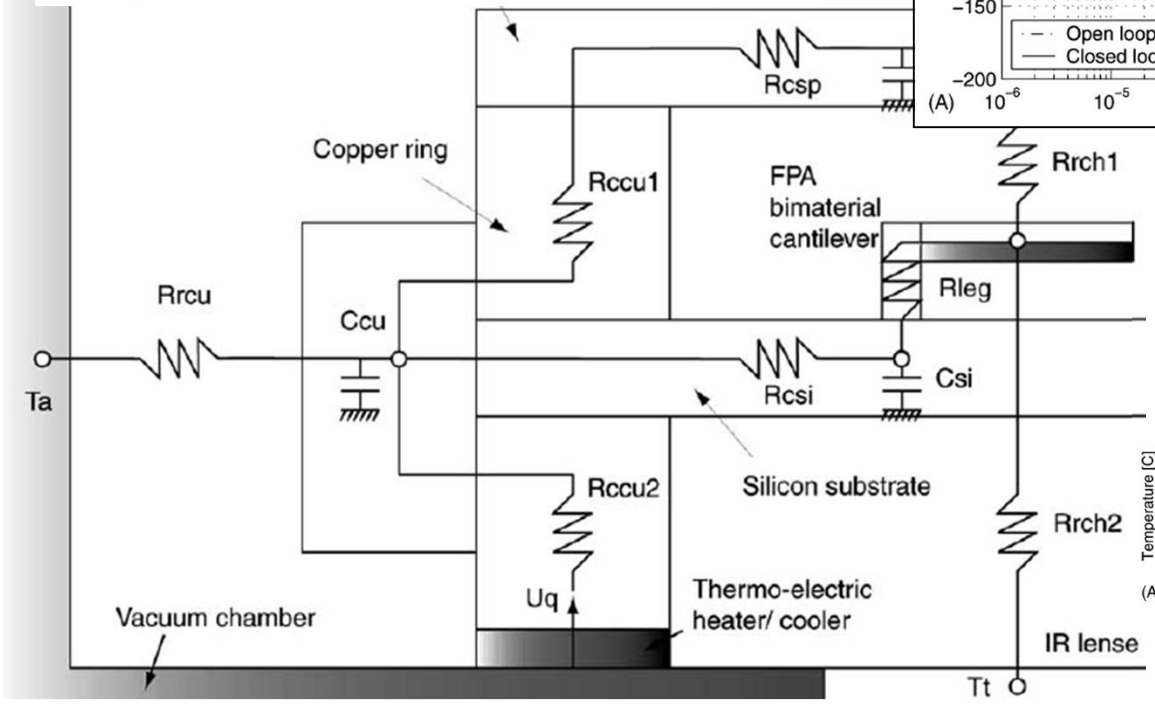


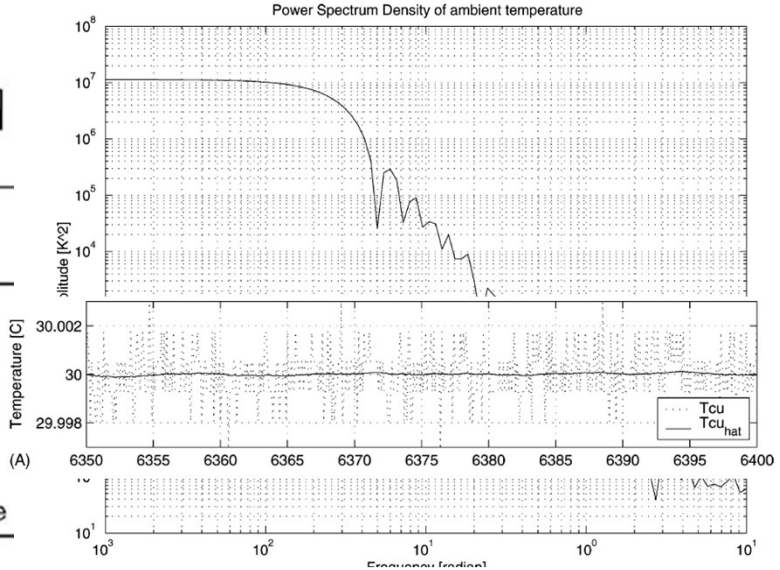
Design and control of a thermal stabilizing system for a MEMS opto-mechanical uncooled infrared imaging camera

Jongeun Choi,
Joji Yamaguchi,
Simon Morales,
Roberto Horowitz,
Yang Zhao,
Arunava Majumdar

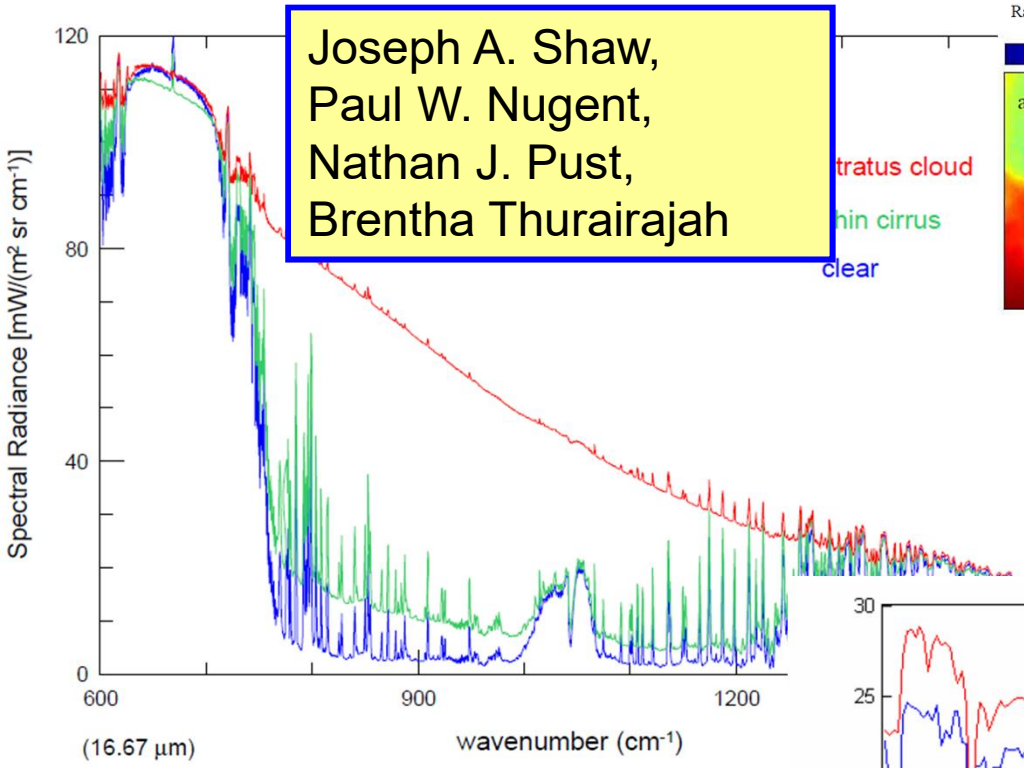


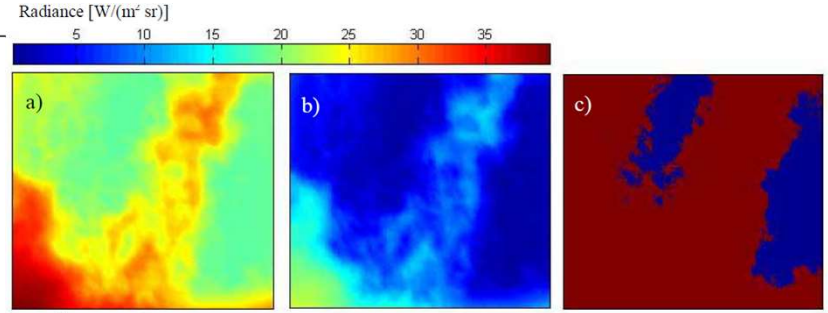




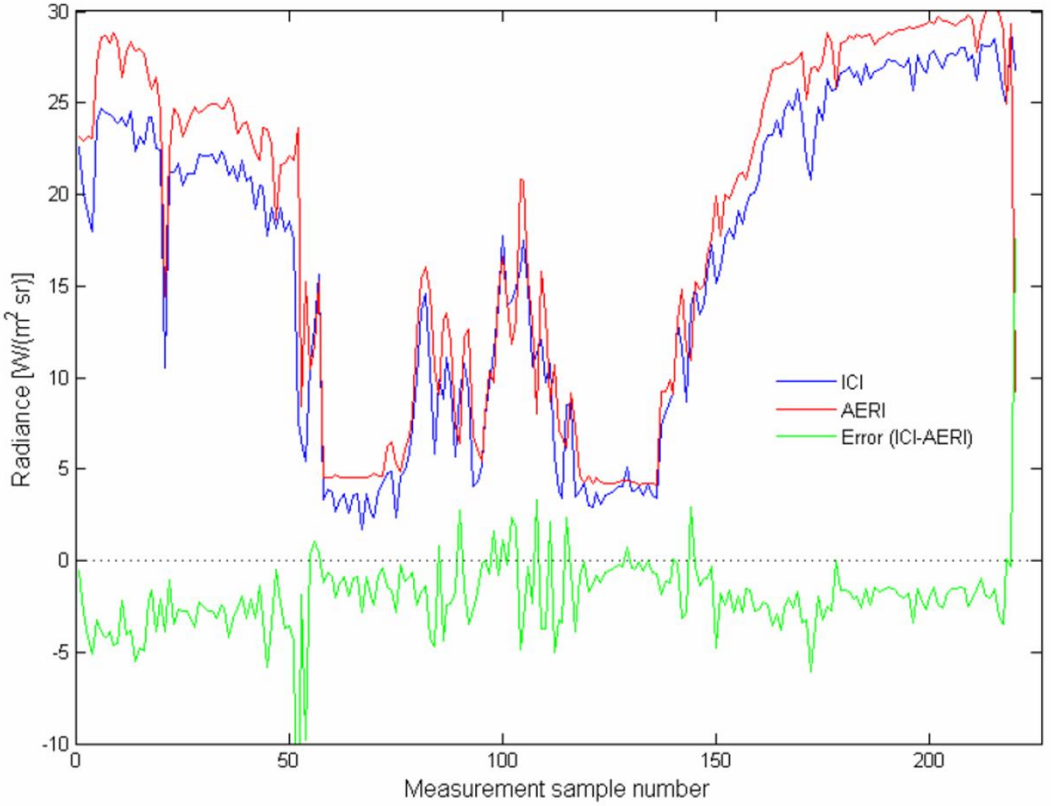


Joseph A. Shaw,
Paul W. Nugent,
Nathan J. Pust,
Brentha Thurairajah



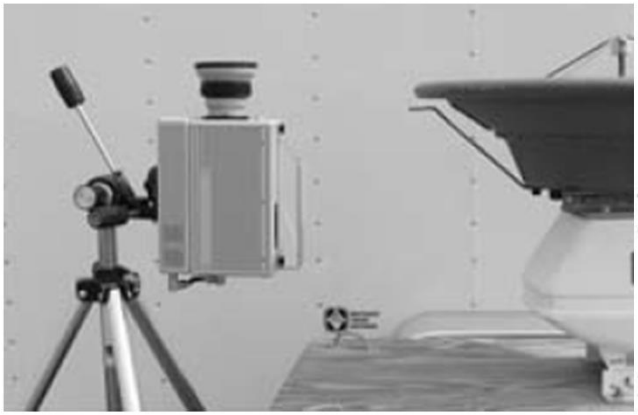


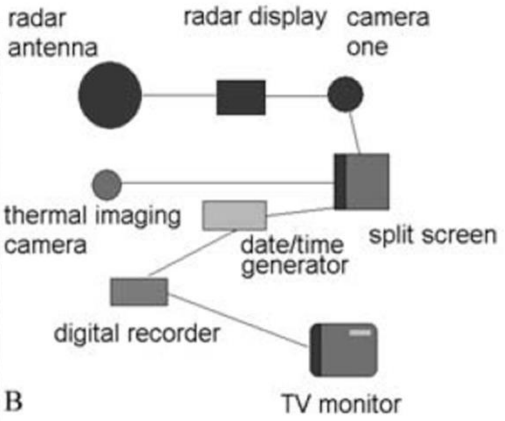
Radiometric cloud imaging with an uncooled microbolometer thermal infrared camera

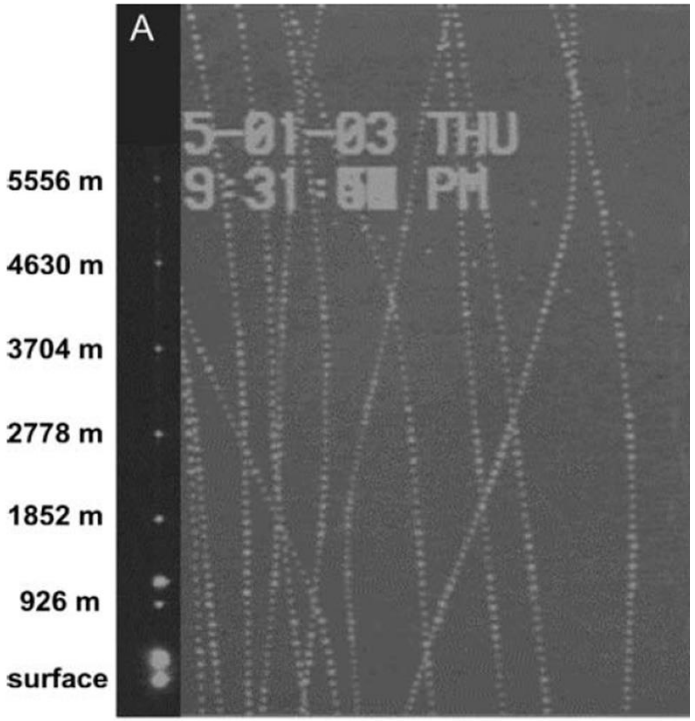


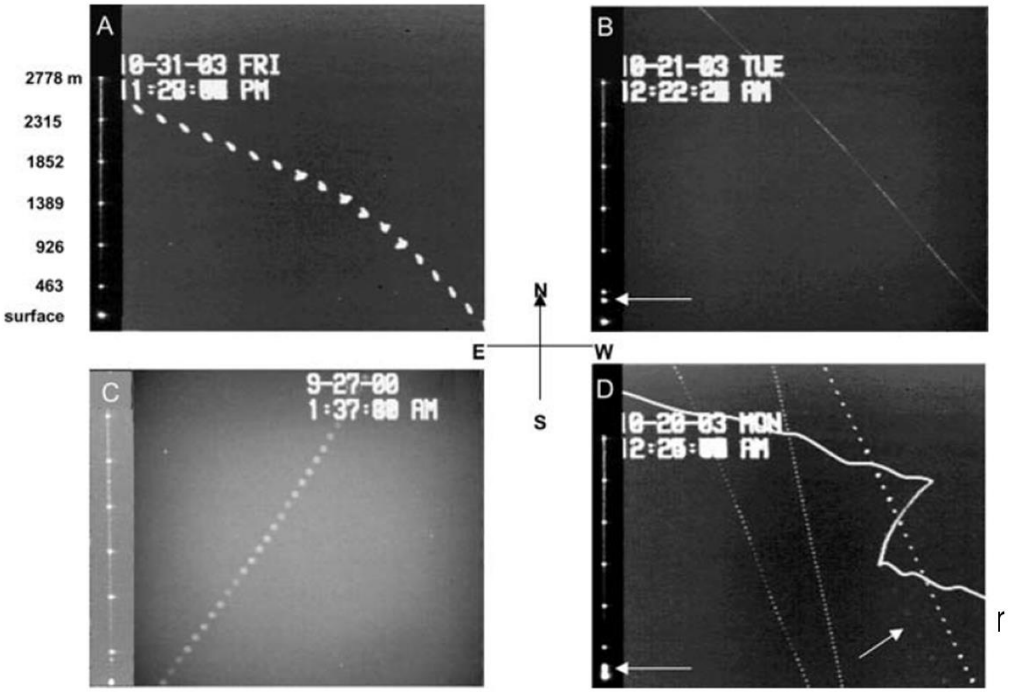
Monitoring bird migration with a fixed-beam radar and a thermal-imaging camera

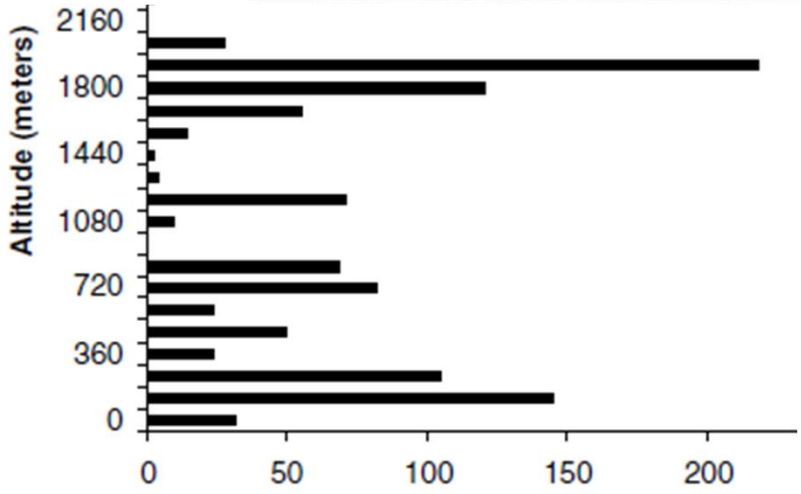
Sidney A. Gauthreaux,
John W. Livingston





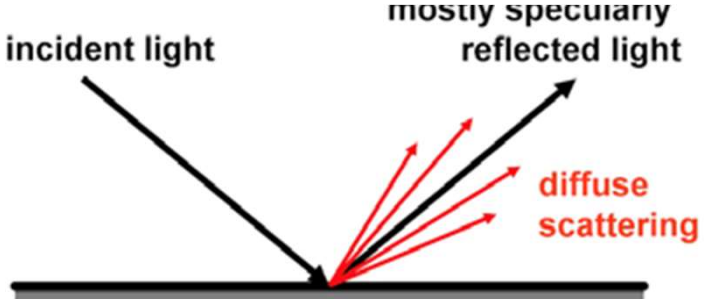


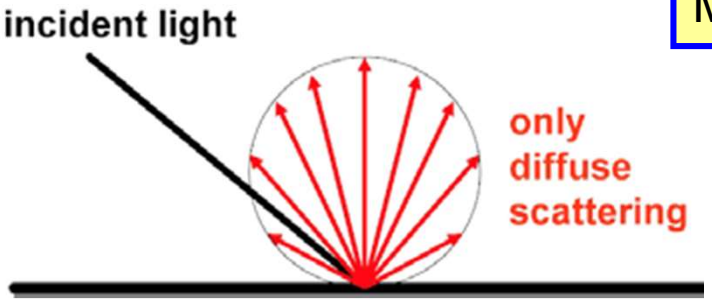


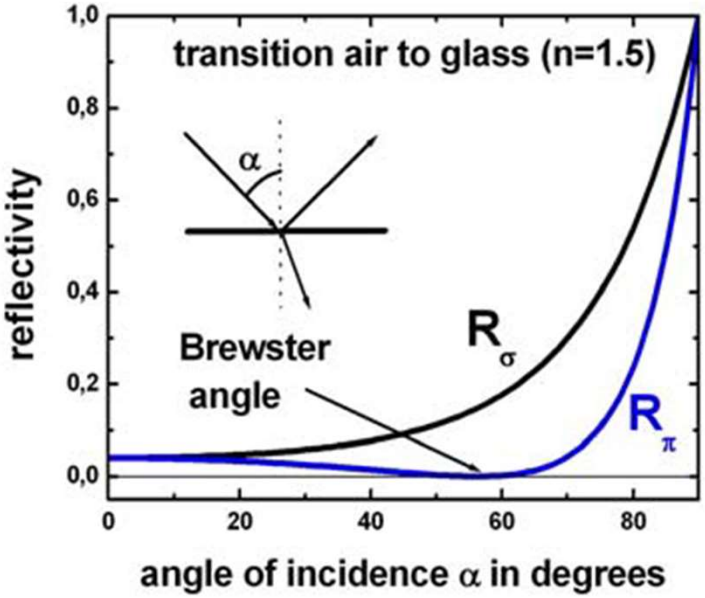


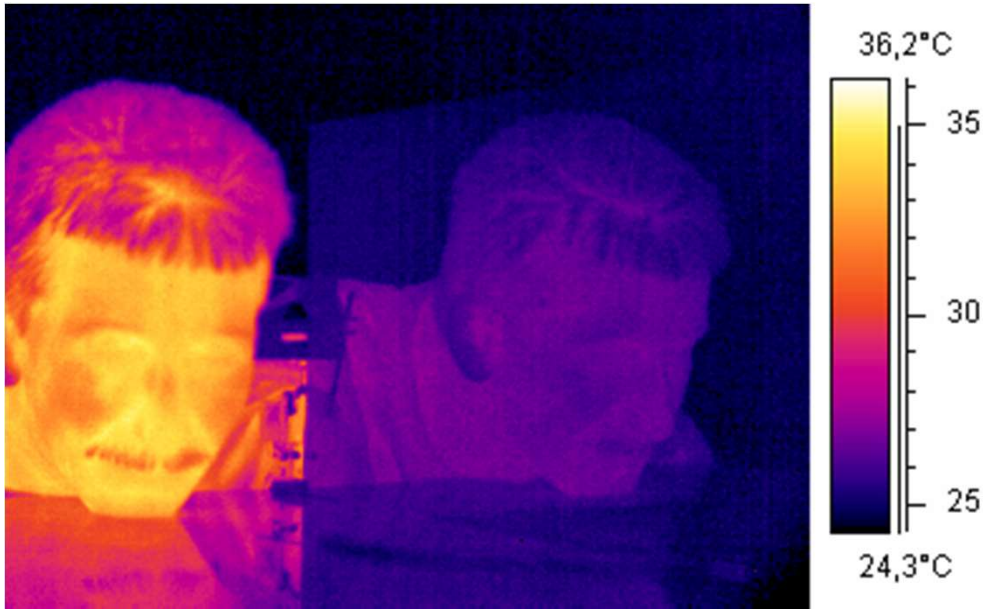
Identification and suppression of thermal reflections in infrared thermal imaging

S. Henke,
D. Karstädt,
K.-P. Möllmann,
F. Pinno
M. Vollmer



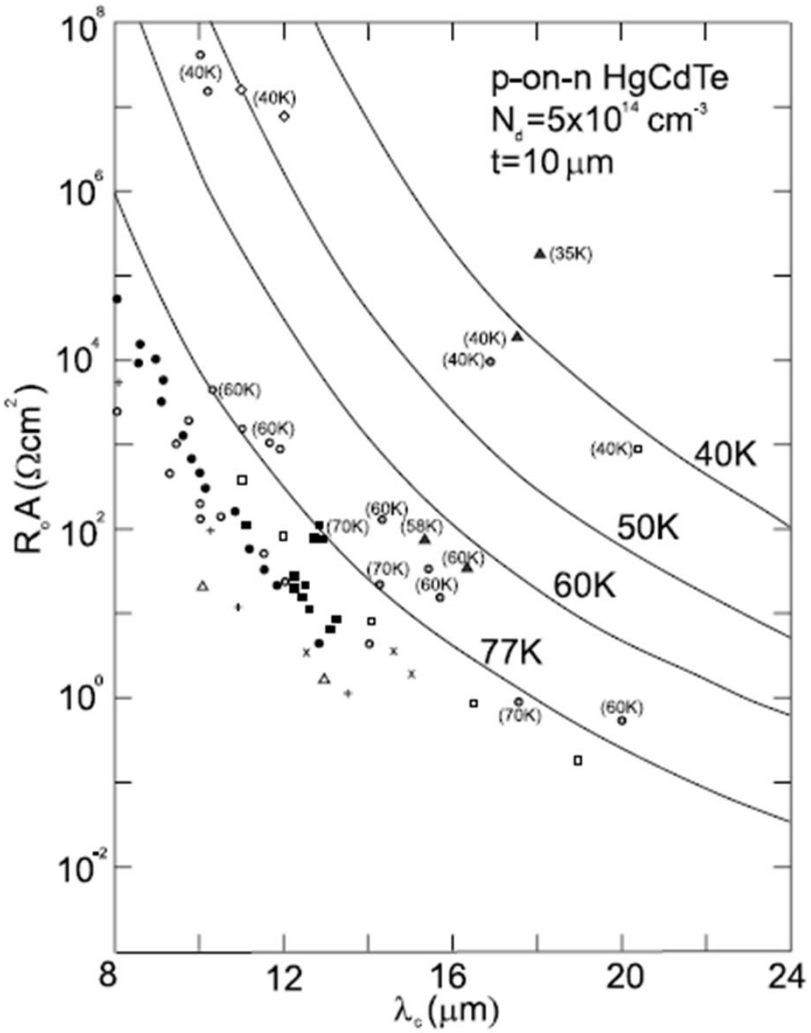


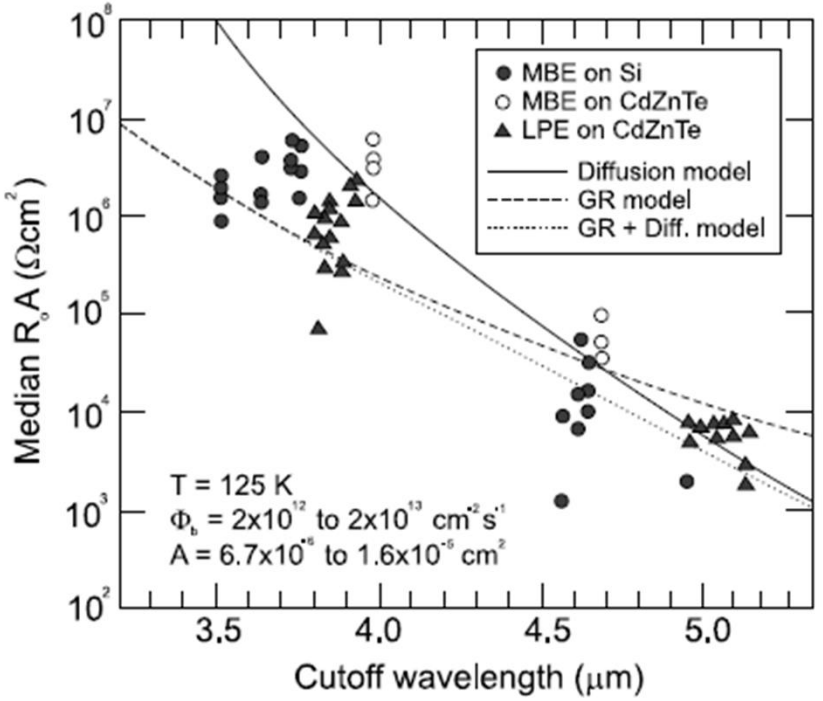


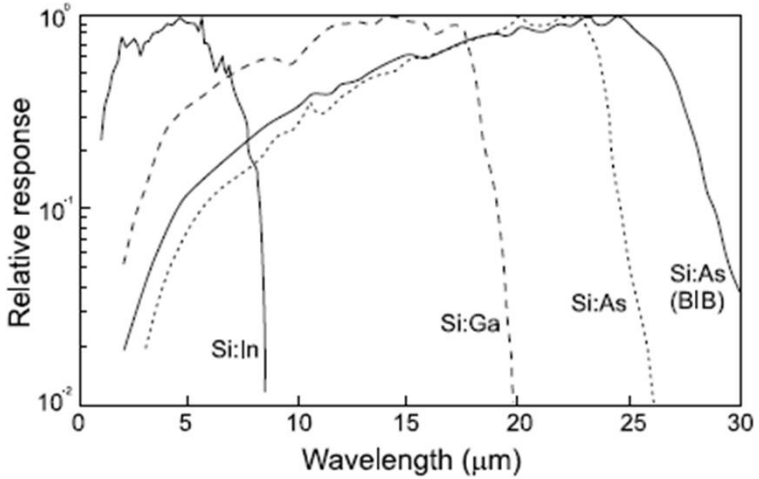


Infrared detectors: an overview

Antoni Rogalski



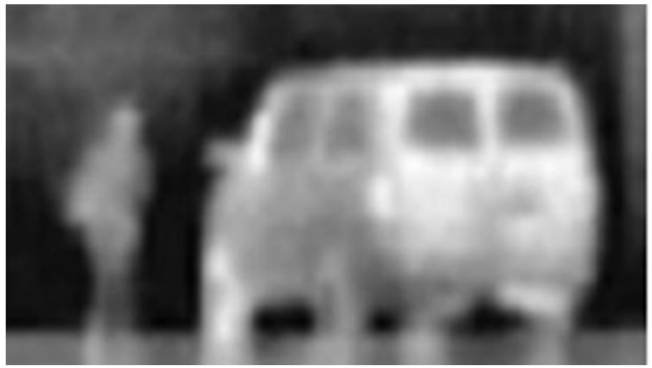


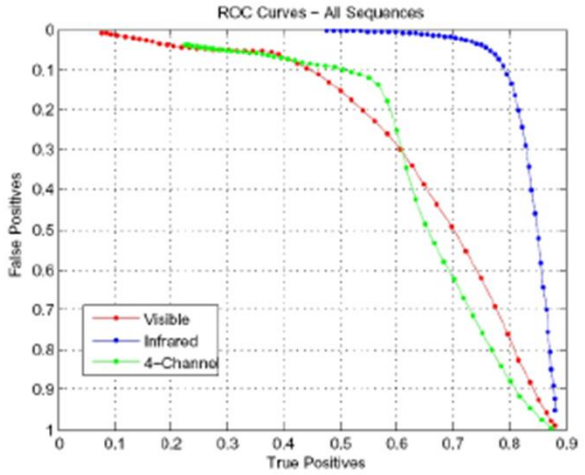


Procesiranje sig

Pedestrian Tracking Using Thermal Infrared Imaging

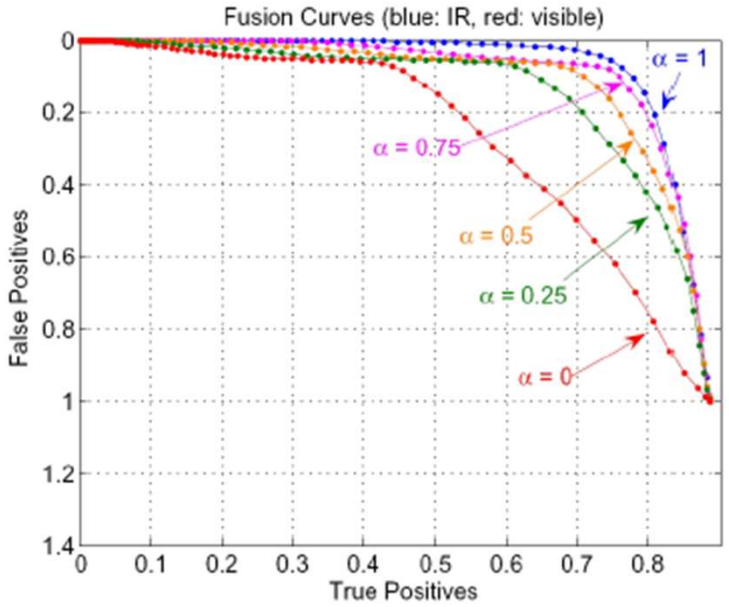
Emmanuel Goubet, Joseph Katz, Fatih Porikli





Procesiranje signala

Pedestrian Tracking Using Thermal Infrared Imaging



No improvement is achieved by alpha blending of the infrared and visible data

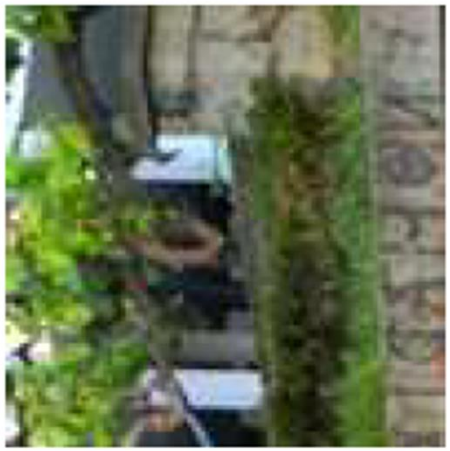
ROC curves for fusion: Color of the graph indicates the value of the weighting coefficient, red corresponds to ..., blue to ... and other colors to ....

Pedestrian Tracking Using Thermal Infrared Imaging

```
img =
```

```
id = ImageData[img][[1 ;; 150, 1 ;; 280]];
newimg = Image[id]
```

```
ReplacePixelValue[newimg, {1 ;; 100, 1 ;; 100} → Yellow]
```



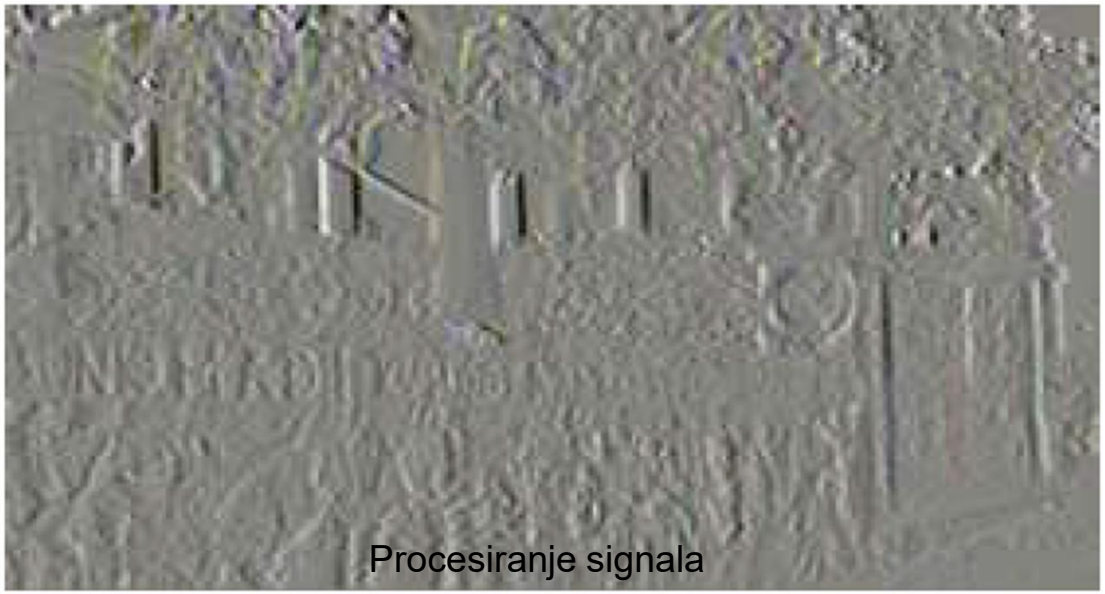
```
Image[Transpose[ImageData[newimg][[1 ;; 100, 1 ;; 100]]]]
```

```
{a, b, c} = ColorSeparate[newimg]
```

```
ColorCombine[{c, a, b}, "RGB"]
```

```
ColorCombine[
 {Image[2 ImageData[b] - ImageData[c]], Image[1/2 (ImageData[b] + ImageData[c])],
  Image[Abs[0.2 * ImageData[a] + 0.42]]}, "RGB"]
```

```
GaussianFilter[newimg, 0.5, {0, 9}] // ImageAdjust
```



```
EdgeDetect[newimg]
```

```
Blur[ newimg, 10]
```

```
Manipulate[Blur[ newimg, t] , {t, 0, 8}]
```

t

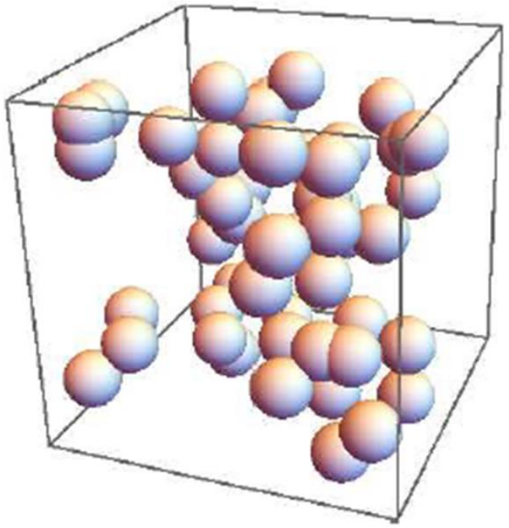

О ГИМНАЗИЈИ

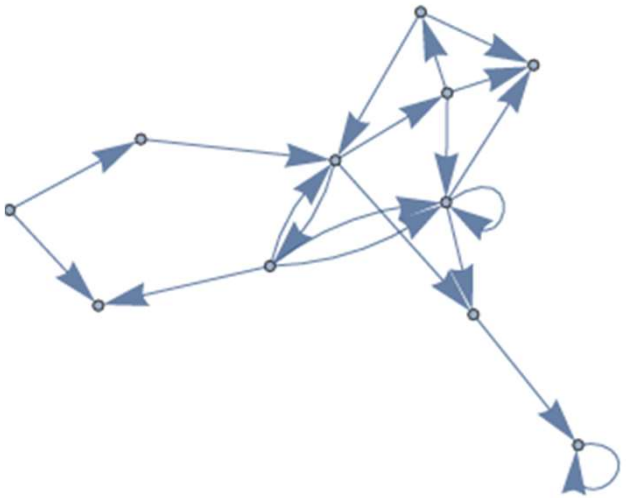

О ГИМНАЗИЈИ

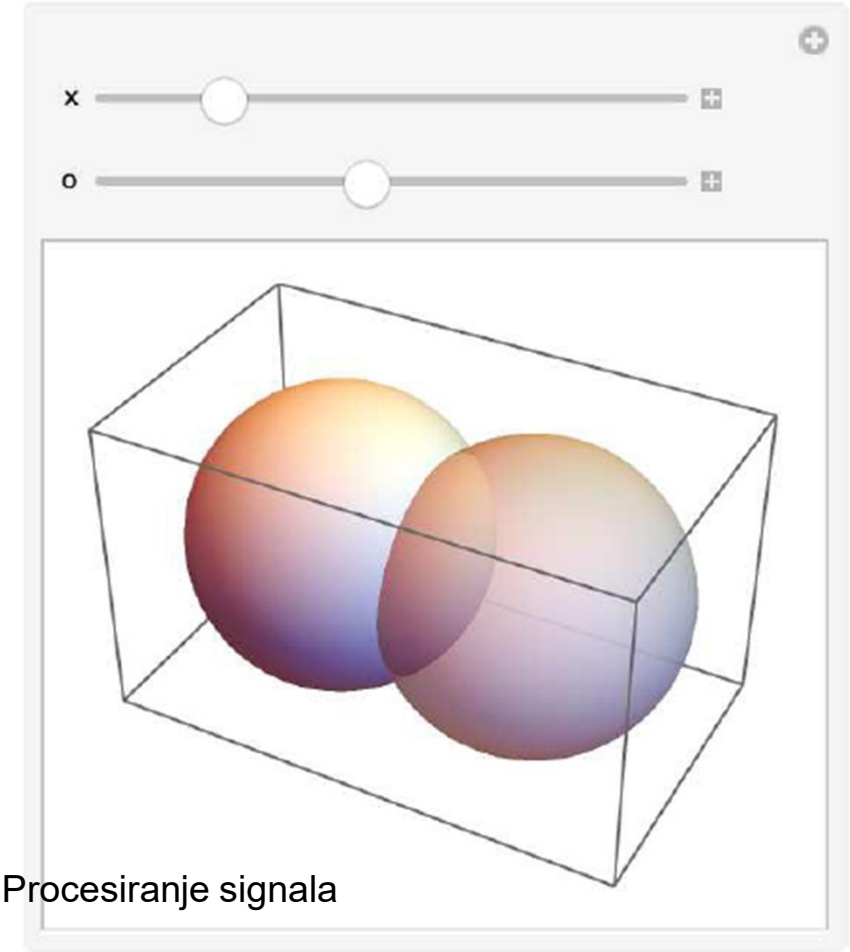
50 spheres at random 3D positions, with each coordinate

In[24]:= **Graphics3D[Table[Sphere[RandomInteger[10, 3]], 50]]**

Out[24]=





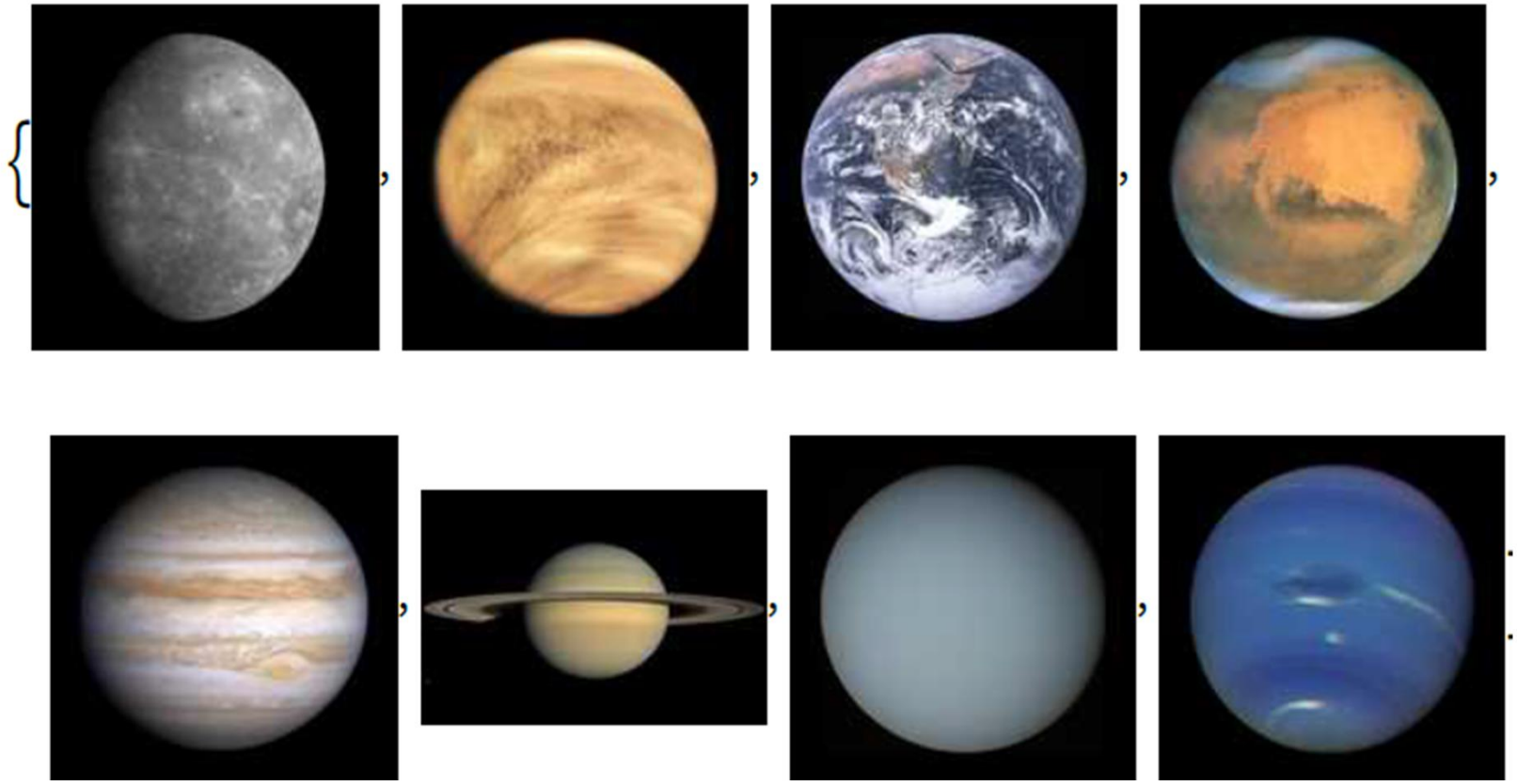


Get the list of planets:

```
In[11]:= EntityList[ planets ]
```

```
Out[11]= { Mercury , Venus , Earth , Mars , Jupiter , Saturn , Uranus , Neptune }
```

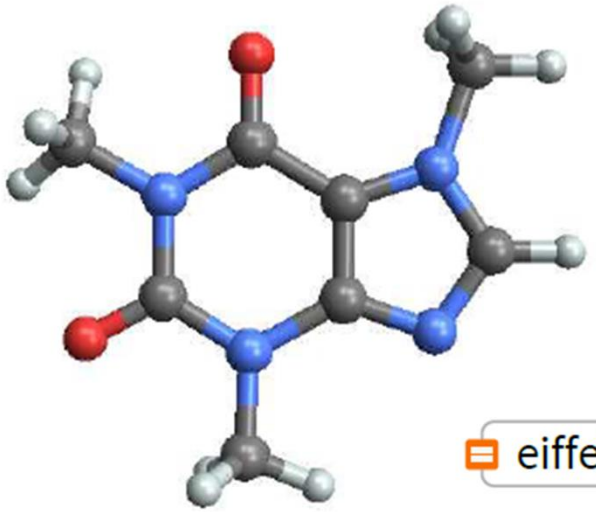
```
EntityValue[ planets , "Image"]
```



A plot of a caffeine molecule:

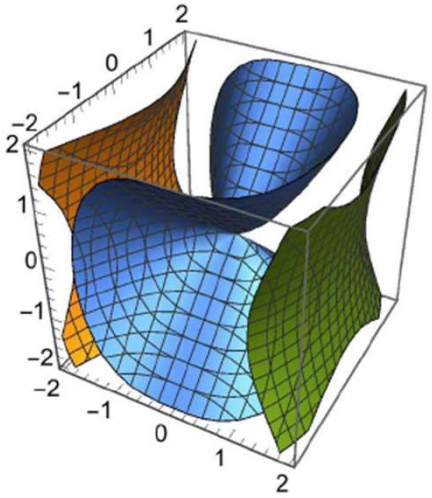
In[23]:= caffeine ["MoleculePlot"]

Out[23]=



skull ["Graphics3D"]

ContourPlot3D[x^3+y^2−z^2,



eiffel tower ["Image"]

Plot countries on a map:

In[3]:= `GeoListPlot[{ iceland , france , italy }]`

Out[3]=

`GeoGraphics[GeoDisk[ eiffel tower ], 1 mile ]]`

Use a relief map as the background:

```
In[14]:= GeoListPlot[ france , GeoRange → europe , GeoBackground → "ReliefMap"]
```

Out[14]=

```
With[{c = europe capital cities coordinates },
 GeoListPlot[c[[Last@FindShortestTour[c]]], J
```

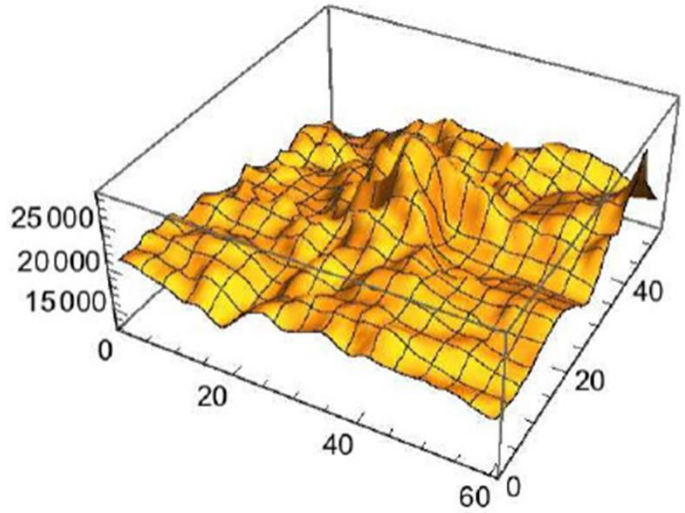
With training examples, Classify correctly identifies a handwritten 0:

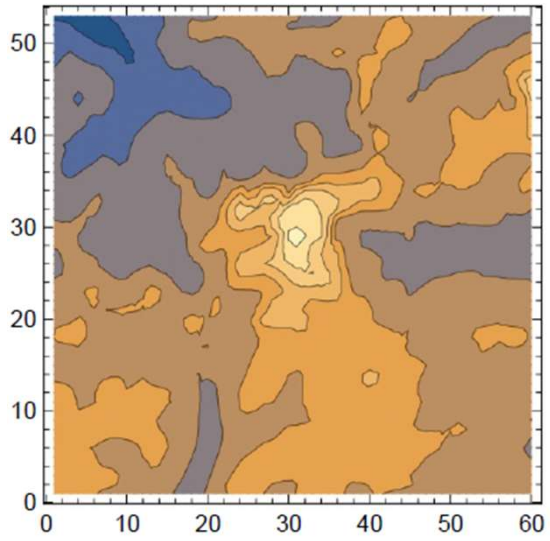
In[5]:=
```
Classify[{ → 0, → 1, → 0, → 1, → 1, → 0, → 0, → 1, → 1,
 → 0, → 0, → 0, → 1, → 0, → 1, → 0, → 1, → 1, → 1},
 ]
```

Out[5]= 0

In[7]:=
```
ListPlot3D[GeoElevationData[GeoDisk[ mount everest , 10 miles ]]]
```

Out[7]=

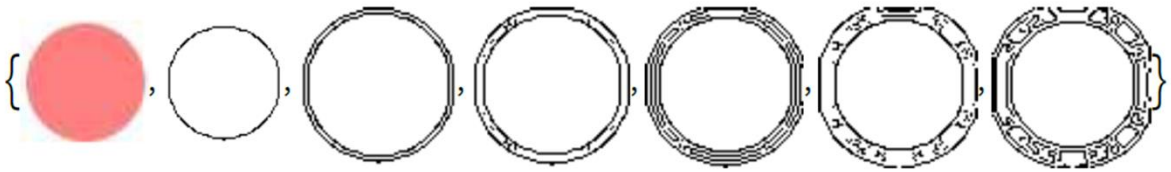




ColorNegate@EdgeDetect@

NestList[ColorNegate[EdgeDetect[#]] &,

, 6]



In[24]:= **ImageInstanceQ[**  **, cat]**

Out[24]= True

Select images of cats:

In[25]:= **Select[{**  **,**  **,**  **,**  **,**  **,**  **},**

ImageInstanceQ[#, cat] &]

Out[25]= {  ,  }

Select cities whose distance from San Francisco is less than 3000 miles:

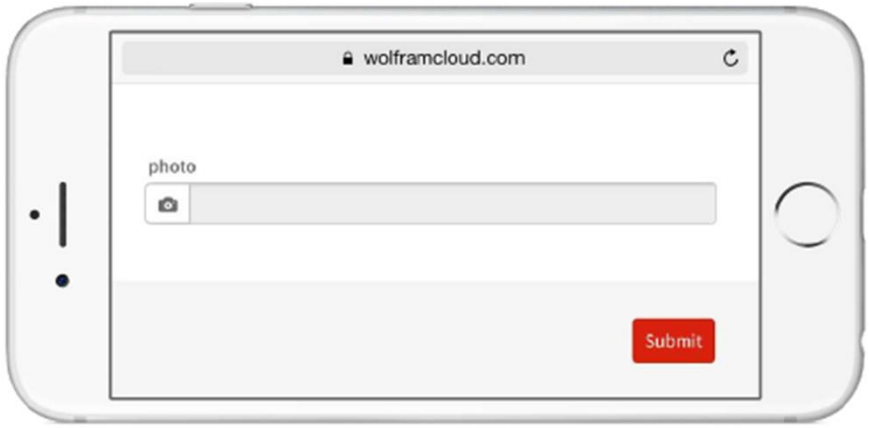
In[26]:= **Select[{ london , nyc , tokyo , chicago },**

GeoDistance[#, san francisco] < 3000 miles &]

Out[26]= { New York City , Chicago }

```
CloudDeploy[FormFunction[{"photo" → "Image"}, EdgeDetect[#photo] &]]
```

```
CloudObject[https://www.wolframcloud.com/objects/727c12b9-6e42-496f-aa1d-0c5630c0fc5c]
```



Profesor dr Miroslav Lutovac
mlutovac@viser.edu.rs