
Subject: Image thresholding

Posted by [Dave Brennan](#) on Mon, 17 May 1999 07:00:00 GMT

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Does anyone know of a fast routine or function for searching through a 3D data set and setting numbers within a predetermined range of values to zero. i.e,

the range is 5 - 10

A data set contains [0,1,2,3,4,5,6,7,8,9]. It becomes
[0,1,2,3,4,0,0,0,0,0]

This would save me a lot of time.

Thanks

Dave Brennan

Subject: Re: Image thresholding

Posted by [Brian Jackel](#) on Mon, 17 May 1999 07:00:00 GMT

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Given

a= [0,1,2,3,4,5,6,7,8,9]

try

b= a * ((a GT 10) OR (a LT 5))

This avoids issues with WHERE not finding a match.

Brian

Subject: Re: Image thresholding

Posted by [Liam Gumley](#) on Mon, 17 May 1999 07:00:00 GMT

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Liam Gumley wrote:

> With all due respect to my esteemed colleagues David Kastrup and David
> Fanning, I believe the fastest method is as follows:

>

> IDL> a = findgen(10)

> IDL> print, ((a lt 5) or (a gt 10)) * a
> 0 1 2 3 4 0 0 0 0 0
>
> Love those Boolean operators....

Of course, I actually meant

IDL> a = indgen(10)

Reminder to self: Make sure you test suggestions before you post them.

Liam E. Gumley
Space Science and Engineering Center, UW-Madison
<http://cimss.ssec.wisc.edu/~gumley>

Subject: Re: Image thresholding
Posted by [mgs](#) on Mon, 17 May 1999 07:00:00 GMT
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In article <MPG.11a9fd6bc48568689897a7@news.frii.com>, davidf@dfanning.com
(David Fanning) wrote:

> David Kastrup (dak@mailhost.neuroinformatik.ruhr-uni-bochum.de) writes:
>
>> You lose.
>
> I lose!? You mean I always get in trouble if I don't spell
> out every little thing. But where is the learning if people
> don't fall into (and dig themselves out of) a few holes?

That would explain why I'm in the Grand Canyon holding a spoon.

> P.S. Let's just say, without problems, there is no progress. :-)

Speaking of problems and progress. Is there any word on the next release of IDL?

--

Mike Schienle	Interactive Visuals, Inc.
mgs@ivsoftware.com	Remote Sensing and Image Processing
http://www.ivsoftware.com/	Analysis and Application Development

Subject: Re: Image thresholding
Posted by [Liam Gumley](#) on Mon, 17 May 1999 07:00:00 GMT
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David Brennan wrote:

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IDL> a = findgen(10)
IDL> print, ((a lt 5) or (a gt 10)) * a
  0  1  2  3  4  0  0  0  0  0
```

Love those Boolean operators....

Cheers,
Liam.

Liam E. Gumley
Space Science and Engineering Center, UW-Madison
1225 W. Dayton St., Madison WI 53706, USA
Phone (608) 265-5358, Fax (608) 262-5974
<http://cimss.ssec.wisc.edu/~gumley>

Subject: Re: Image thresholding
Posted by [davidf](#) on Mon, 17 May 1999 07:00:00 GMT
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David Kastrup (dak@mailhost.neuroinformatik.ruhr-uni-bochum.de) writes:

> You lose.

I lose!? You mean I always get in trouble if I don't spell out every little thing. But where is the learning if people don't fall into (and dig themselves out of) a few holes?

Cheers,

David

P.S. Let's just say, without problems, there is no progress. :-)

--

David Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438 E-Mail: davidf@dfanning.com
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: Image thresholding
Posted by [Struan Gray](#) on Tue, 18 May 1999 07:00:00 GMT
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Liam Gumley, Liam.Gumley@ssec.wisc.edu writes:

> With all due respect to my esteemed colleagues
> David Kastrup and David Fanning, I believe the
> fastest method is as follows:
>
> ((a lt 5) or (a gt 10)) * a

Speed is hard to pin down, and I appreciate the august company I am keeping here, so I won't make any absolutist remarks. However, for my sort of data on my sort of machines the HISTOGRAM function usually works as well as or better than direct comparisons:

```
a = indgen(100)
hist = histogram(a, reverse_indices=r)
a(r(r(5):r(10)-1)) = 0
```

This is especially good for things like interactive image thresholding because you only need to calculate the histogram once. Also, as your datasets get larger you start to save significant amounts of memory, since the histogram is usually much smaller than the comparison arrays. For arbitrary data with an unknown maximum or minimum value, there is a danger that you reference elements of the reverse_indices array which don't exist (try the above with a=indgen(10)), but cunning use of the BINSIZE, MAX and MIN keywords usually solves the problem.

For one-time use further speed gains can be had by only constructing the histogram for the data range you are interested in, viz:

```
a = indgen(100)
hist = histogram(a, min=5, max=10, reverse_indices=r)
a(r(r(0):r(5)-1)) = 0
```

Struan

Subject: Re: Image thresholding
Posted by [REV](#) on Fri, 21 May 1999 07:00:00 GMT
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```
DL> c=[0,1,2,3,4,5,6,7,8,9]
IDL> b=c
IDL> c(where(c ge 5 and c le 10)) = 0
IDL> print,c
    0    1    2    3    4    0    0    0    0
    0
```

David Brennan <9147261b@clinmed.gla.ac.uk> wrote in article
<3740387C.72B259F7@clinmed.gla.ac.uk>...

- > Does anyone know of a fast routine or function for searching through a
- > 3D data set and setting numbers within a predetermined range of values
- > to zero. i.e,
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- > the range is 5 - 10
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- > This would save me a lot of time.
- >
- >
- > Thanks
- >
- > Dave Brennan
- >
- >
