
Subject: Re: Random problem with Delaunay triangulation - Correction
Posted by [wgallery](#) on Tue, 11 Sep 2007 21:56:38 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:
> On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:
>
>> Bill, here a practical tip: Have you tried to randomly reshuffle your input
>> data? Does this make a difference? H.
>
>> "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message
>
>> [news:fc6oi5\\$ei3\\$1@apl.netnews.jhuapl.edu](mailto:news:fc6oi5$ei3$1@apl.netnews.jhuapl.edu)...
>
>>> Bill,
>>> you just hit a nerve with me. I thought I was the only one having those
>
> Haje,
>
> I did not try reshuffling the input data, but did find a fix.
> Originally, the input data had a minimum latitude of 30.0 deg N and
> the specified regular grid also had a minimum latitude of 30.0. When
> I expanded the input data to have a minimum latitude of 20 deg N, the
> error message went away. Apparently you need data outside the area of
> interest for the interpolation to be robust.
>
> Further experimentation showed that when the minimum latitude of the
> input data was 30. deg, the interpolated values at 30 deg for the
> cases that did not fail showed large excursions from expected values.
> This may be partially due to the nature of the input data, which is
> poorly sampled below ~40 deg N (temperature data from the SABER
> instrument on the TIMED satellite.)
>
> Does anyone has any experience with the relative merits of the
> following routines for interpolation on a sphere?
>
> 1. qhull and griddata
>
> 2. sph_scat.pro
>
> 3. triangulate and trigrid
>
> Bill

Correction, expanding the input data did not correct the problem: I
got the same message from a different case.

Puzzled

Subject: Re: Random problem with Delaunay triangulation - Correction

Posted by [Haje Korth](#) on Wed, 12 Sep 2007 12:14:17 GMT

[View Forum Message](#) <> [Reply to Message](#)

Bill,

what you describe seems to pretty much the story of my life with spherical interpolation in IDL. Basically, I can find after some playing around a fix for a particular data set only to find that the fix was not universal enough and the next interpolation with another data set would blow up again. There must be a certain set of underlying rules for the IDL spherical interpolation routines. If one would know them, the data set could be massaged appropriately to avoid the problem. My experience is though that this goes beyond the \$64,000 question. So any enlightenment is appreciated here.

Haje

"Bill Gallery" <wgallery@aer.com> wrote in message

news:1189547798.290652.299080@b32g2000prf.googlegroups.com.. .

> On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:

>> On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:

>>

>>> Bill, here a practical tip: Have you tried to randomly reshuffle your

>>> input

>>> data? Does this make a difference? H.

>>

>>> "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message

>>

>>> news:fc6oi5\$ei3\$1@aplnetnews.jhuapl.edu...

>>

>>>> Bill,

>>>> you just hit a nerve with me. I thought I was the only one having

>>>> those

>>

>> Haje,

>>

>> I did not try reshuffling the input data, but did find a fix.

>> Originally, the input data had a minimum latitude of 30.0 deg N and

>> the specified regular grid also had a minimum latitude of 30.0. When

>> I expanded the input data to have a minimum latitude of 20 deg N, the

>> error message went away. Apparently you need data outside the area of

>> interest for the interpolation to be robust.

>>

>> Further experimentation showed that when the minimum latitude of the

>> input data was 30. deg, the interpolated values at 30 deg for the
>> cases that did not fail showed large excursions from expected values.
>> This may be partially due to the nature of the input data, which is
>> poorly sampled below ~40 deg N (temperature data from the SABER
>> instrument on the TIMED satellite.)
>>
>> Does anyone has any experience with the relative merits of the
>> following routines for interpolation on a sphere?
>>
>> 1. qhull and griddata
>>
>> 2. sph_scat.pro
>>
>> 3. triangulate and trigrd
>>
>> Bill
>
> Correction, expanding the input data did not correct the problem: I
> got the same message from a different case.
>
> Puzzled
>
> Bill Gallery
>

Subject: Re: Random problem with Delaunay triangulation - Correction
Posted by [ben.bighair](#) on Wed, 12 Sep 2007 13:37:41 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Sep 12, 8:14 am, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:
> Bill,
> what you describe seems to pretty much the story of my life with spherical
> interpolation in IDL. Basically, I can find after some playing around a fix
> for a particular data set only to find that the fix was not universal enough
> and the next interpolation with another data set would blow up again. There
> must be a certain set of underlying rules for the IDL spherical
> interpolation routines. If one would know them, the data set could be
> massaged appropriately to avoid the problem. My experience is though that
> this goes beyond the \$64,000 question. So any enlightenment is appreciated
> here.
>
> Haje
>
> "Bill Gallery" <wgall...@aer.com> wrote in message
>
> news:1189547798.290652.299080@b32g2000prf.googlegroups.com.. .
>

>> On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:

>>> On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:

>

>>>> Bill, here a practical tip: Have you tried to randomly reshuffle your

>>>> input

>>>> data? Does this make a difference? H.

>

>>>> "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message

>

>>>> news:fc6oi5\$ei3\$1@aplnetnews.jhuapl.edu...

>

>>>> > Bill,

>>>> > you just hit a nerve with me. I thought I was the only one having

>>>> > those

>

>>> Haje,

>

>>> I did not try reshuffling the input data, but did find a fix.

>>> Originally, the input data had a minimum latitude of 30.0 deg N and

>>> the specified regular grid also had a minimum latitude of 30.0. When

>>> I expanded the input data to have a minimum latitude of 20 deg N, the

>>> error message went away. Apparently you need data outside the area of

>>> interest for the interpolation to be robust.

>

>>> Further experimentation showed that when the minimum latitude of the

>>> input data was 30. deg, the interpolated values at 30 deg for the

>>> cases that did not fail showed large excursions from expected values.

>>> This may be partially due to the nature of the input data, which is

>>> poorly sampled below ~40 deg N (temperature data from the SABER

>>> instrument on the TIMED satellite.)

>

>>> Does anyone has any experience with the relative merits of the

>>> following routines for interpolation on a sphere?

>

>>> 1. qhull and griddata

>

>>> 2. sph_scat.pro

>

>>> 3. triangulate and trigrd

>

>>> Bill

>

>> Correction, expanding the input data did not correct the problem: I

>> got the same message from a different case.

>

>> Puzzled

>

>> Bill Gallery

Hi,

I have not done much with spherical data and interpolation, but I found the GRID_INPUT routine helpful when using plain-old-flat-earth gridding. It might be worth running the data through that first.

Cheers,
Ben

Subject: Re: Random problem with Delaunay triangulation - Correction
Posted by [ben.bighair](#) on Wed, 12 Sep 2007 13:38:06 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Sep 12, 8:14 am, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:

> Bill,
> what you describe seems to pretty much the story of my life with spherical
> interpolation in IDL. Basically, I can find after some playing around a fix
> for a particular data set only to find that the fix was not universal enough
> and the next interpolation with another data set would blow up again. There
> must be a certain set of underlying rules for the IDL spherical
> interpolation routines. If one would know them, the data set could be
> massaged appropriately to avoid the problem. My experience is though that
> this goes beyond the \$64,000 question. So any enlightenment is appreciated
> here.
>
> Haje
>
> "Bill Gallery" <wgall...@aer.com> wrote in message
>
> news:1189547798.290652.299080@b32g2000prf.googlegroups.com..
>
>> On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:
>>> On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:
>
>>>> Bill, here a practical tip: Have you tried to randomly reshuffle your
>>>> input
>>>> data? Does this make a difference? H.
>
>>>> "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message
>
>>>> [news:fc6oi5\\$ei3\\$1@aplnetnews.jhuapl.edu](mailto:news:fc6oi5$ei3$1@aplnetnews.jhuapl.edu)..
>
>>>> > Bill,
>>>> > you just hit a nerve with me. I thought I was the only one having
>>>> > those
>

>>> Haje,
>
>>> I did not try reshuffling the input data, but did find a fix.
>>> Originally, the input data had a minimum latitude of 30.0 deg N and
>>> the specified regular grid also had a minimum latitude of 30.0. When
>>> I expanded the input data to have a minimum latitude of 20 deg N, the
>>> error message went away. Apparently you need data outside the area of
>>> interest for the interpolation to be robust.
>
>>> Further experimentation showed that when the minimum latitude of the
>>> input data was 30. deg, the interpolated values at 30 deg for the
>>> cases that did not fail showed large excursions from expected values.
>>> This may be partially due to the nature of the input data, which is
>>> poorly sampled below ~40 deg N (temperature data from the SABER
>>> instrument on the TIMED satellite.)
>
>>> Does anyone has any experience with the relative merits of the
>>> following routines for interpolation on a sphere?
>
>>> 1. qhull and griddata
>
>>> 2. sph_scat.pro
>
>>> 3. triangulate and trigridd
>
>>> Bill
>
>> Correction, expanding the input data did not correct the problem: I
>> got the same message from a different case.
>
>> Puzzled
>
>> Bill Gallery

Hi,

I have not done much with spherical data and interpolation, but I found the GRID_INPUT routine helpful when using plain-old-flat-earth gridding. It might be worth running the data through that first.

Cheers,
Ben

Subject: Re: Random problem with Delaunay triangulation - Correction
Posted by [wgallery](#) on Wed, 12 Sep 2007 15:19:43 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Sep 12, 9:38 am, "ben.bighair" <ben.bigh...@gmail.com> wrote:

> On Sep 12, 8:14 am, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:

>

>

>

>> Bill,

>> what you describe seems to pretty much the story of my life with spherical

>> interpolation in IDL. Basically, I can find after some playing around a fix

>> for a particular data set only to find that the fix was not universal enough

>> and the next interpolation with another data set would blow up again. There

>> must be a certain set of underlying rules for the IDL spherical

>> interpolation routines. If one would know them, the data set could be

>> massaged appropriately to avoid the problem. My experience is though that

>> this goes beyond the \$64,000 question. So any enlightenment is appreciated

>> here.

>

>> Haje

>

>> "Bill Gallery" <wgall...@aer.com> wrote in message

>

>> news:1189547798.290652.299080@b32g2000prf.googlegroups.com.. .

>

>>> On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:

>>>> On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:

>

>>>> > Bill, here a practical tip: Have you tried to randomly reshuffle your

>>>> > input

>>>> > data? Does this make a difference? H.

>

>>>> > "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message

>

>>>> >news:fc6oi5\$ei3\$1@aplnetnews.jhuapl.edu...

>

>>>> > > Bill,

>>>> > > you just hit a nerve with me. I thought I was the only one having

>>>> > > those

>

>>>> Haje,

>

>>>> I did not try reshuffling the input data, but did find a fix.

>>>> Originally, the input data had a minimum latitude of 30.0 deg N and

>>>> the specified regular grid also had a minimum latitude of 30.0. When

>>>> I expanded the input data to have a minimum latitude of 20 deg N, the

>>>> error message went away. Apparently you need data outside the area of

>>>> interest for the interpolation to be robust.

>

>>>> Further experimentation showed that when the minimum latitude of the

>>>> input data was 30. deg, the interpolated values at 30 deg for the

>>>> cases that did not fail showed large excursions from expected values.
>>>> This may be partially due to the nature of the input data, which is
>>>> poorly sampled below ~40 deg N (temperature data from the SABER
>>>> instrument on the TIMED satellite.)

>

>>>> Does anyone has any experience with the relative merits of the
>>>> following routines for interpolation on a sphere?

>

>>>> 1. qhull and griddata

>

>>>> 2. sph_scat.pro

>

>>>> 3. triangulate and trigrd

>

>>>> Bill

>

>>> Correction, expanding the input data did not correct the problem: I
>>> got the same message from a different case.

>

>>> Puzzled

>

>>> Bill Gallery

>

> Hi,

>

> I have not done much with spherical data and interpolation, but I
> found the GRID_INPUT routine helpful when using plain-old-flat-earth
> gridding. It might be worth running the data through that first.

>

> Cheers,

> Ben

Brilliant!

The data had duplicate points I wasn't aware of. grid_input eliminated
them and solved the problem.

Thanks,
Bill

Subject: Re: Random problem with Delaunay triangulation - Correction
Posted by [ben.bighair](#) on Wed, 12 Sep 2007 20:04:26 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Sep 12, 11:19 am, Bill Gallery <wgall...@aer.com> wrote:
> On Sep 12, 9:38 am, "ben.bighair" <ben.bigh...@gmail.com> wrote:
>

>
>
>> On Sep 12, 8:14 am, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:
>
>>> Bill,
>>> what you describe seems to pretty much the story of my life with spherical
>>> interpolation in IDL. Basically, I can find after some playing around a fix
>>> for a particular data set only to find that the fix was not universal enough
>>> and the next interpolation with another data set would blow up again. There
>>> must be a certain set of underlying rules for the IDL spherical
>>> interpolation routines. If one would know them, the data set could be
>>> massaged appropriately to avoid the problem. My experience is though that
>>> this goes beyond the \$64,000 question. So any enlightenment is appreciated
>>> here.
>
>>> Haje
>
>>> "Bill Gallery" <wgall...@aer.com> wrote in message
>
>>> news:1189547798.290652.299080@b32g2000prf.googlegroups.com.. .
>
>>>> On Sep 11, 5:15 pm, Bill Gallery <wgall...@aer.com> wrote:
>>>> > On Sep 11, 3:27 pm, "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote:
>
>>>> > > Bill, here a practical tip: Have you tried to randomly reshuffle your
>>>> > > input
>>>> > > data? Does this make a difference? H.
>
>>>> > > "Haje Korth" <haje.ko...@nospam.jhuapl.edu> wrote in message
>
>>>> > > news:fc6oi5\$ei3\$1@aplnetnews.jhuapl.edu...
>
>>>> > > > Bill,
>>>> > > > you just hit a nerve with me. I thought I was the only one having
>>>> > > > those
>
>>>> > Haje,
>
>>>> > I did not try reshuffling the input data, but did find a fix.
>>>> > Originally, the input data had a minimum latitude of 30.0 deg N and
>>>> > the specified regular grid also had a minimum latitude of 30.0. When
>>>> > I expanded the input data to have a minimum latitude of 20 deg N, the
>>>> > error message went away. Apparently you need data outside the area of
>>>> > interest for the interpolation to be robust.
>
>>>> > Further experimentation showed that when the minimum latitude of the
>>>> > input data was 30. deg, the interpolated values at 30 deg for the
>>>> > cases that did not fail showed large excursions from expected values.

>>>> > This may be partially due to the nature of the input data, which is
>>>> > poorly sampled below ~40 deg N (temperature data from the SABER
>>>> > instrument on the TIMED satellite.)
>
>>>> > Does anyone has any experience with the relative merits of the
>>>> > following routines for interpolation on a sphere?
>
>>>> > 1. qhull and griddata
>
>>>> > 2. sph_scat.pro
>
>>>> > 3. triangulate and trigrid
>
>>>> > Bill
>
>>>> Correction, expanding the input data did not correct the problem: I
>>>> got the same message from a different case.
>
>>>> Puzzled
>
>>>> Bill Gallery
>
>> Hi,
>
>> I have not done much with spherical data and interpolation, but I
>> found the GRID_INPUT routine helpful when using plain-old-flat-earth
>> gridding. It might be worth running the data through that first.
>
>> Cheers,
>> Ben
>
> Brilliant!
>
> The data had duplicate points I wasn't aware of. grid_input eliminated
> them and solved the problem.
>
> Thanks,
> Bill

Aw, shucks.
