



Rishav Chourasia <rishavchourasia@gmail.com>

FW: RE: Multi EIASC

Frank <frankrhee@hanmail.net>

Fri, Mar 23, 2018 at 2:01 PM

To: "nikhil.yadala" <nikhil.yadala@gmail.com>, "saxena.vaibhav96"

<saxena.vaibhav96@gmail.com>, rishavchourasia <rishavchourasia@gmail.com>

All of you please read the below and prepare replies and revision for the present draft.

At first Prof. Mendel was excited about the idea however he needs to be convinced that multi km is okay for pattern recognition muti dimensional data.

Please prepare replies to all of Prof Mendels concerns and send back to me so that I can integrate my thoughts.

I have been very busy these days.

We need to move forward and get this completed right away.

If we would have showned Mendel a better draft he may not have been so negative.

He also complained why this was shown to him so late.

Please work on this right away.

----- 원본 메일 -----

보낸사람: Frank <frankrhee@hanmail.net>

받는사람: Jerry Mendel <jmmprof@me.com>

날짜: 18.03.06 16:41 GMT +0900

제목: RE: Multi EIASC

Dear Prof. Mendel,

As always I really appreciate your kind and valuable comments.

Please allow me some time (very short if possible) to reply to all your comments below.

As I will need to investigate replies to your comments and communicate with my Indian students.

Again many thanks for your valuable input.

I'll try to get back to you soon.

Sincerely,

Frank

----- 원본 메일 -----

보낸사람: Jerry Mendel <jmmprof@me.com>

받는사람: <frankrhee@hanmail.net>

날짜: 18.03.02 01:51 GMT +0900

제목: Multi EIASC

Hi Frank:

I had some time to look at the paper you sent to me about the “Multi EIASC.” As I told you when we met, I am already involved in 10 projects and so I have very little time to think about any others. I must admit that I was not able to follow all of the math in the paper. Analytical geometry is not one of my strong points. I did have some “critical” thoughts though about this work.

1. Your work focuses on clustering whereas mine focuses on (among other things) rule-based fuzzy systems. It may be that for clustering, a multi-dimensional MF is appropriate; but, the more I think about it the less I believe that this is true for a rule-based fuzzy system. Here is why: When one begins with p inputs, x_1, x_2, \dots, x_p and an output y , so one has the “pair” $(x_1, x_2, \dots, x_p: y(\mathbf{x}))$, the “commas” are short for the word “and”, so it seems very appropriate to model $\mu(x_1, x_2, \dots, x_p)$ as $\mu(x_1) * \mu(x_2) * \dots * \mu(x_p)$, where $*$ denotes a t-norm. The same applies for the input to a fuzzy system, (x_1, x_2, \dots, x_p) . Also, an IF-THEN rule is stated as IF x_1 is F_1 , x_2 is F_2 , and \dots , and x_p is F_P , THEN y is G . So, again separability is “natural” because of the way in which a rule is stated. I think that some of this line of reasoning also applies to clustering.

2. While it seems “intuitive” to go from a switch point to a switch line or to a switch surface, a rigorous mathematical proof of this is needed. I don't follow the math in equations (6)-(12). it seems that it assumes a “line”; but this need to be proved.

3. The extension from two to p variables seems mind-boggling to me. Solving multi-dimensional optimization problems is hard. The “beauty” for separable MFs is that everything can be easily visualized and computed.

4. Who will use these results? Non-separable MFs lead to all sorts of difficulties ranging from how to compute the sup-star composition when they are used, to optimizing their parameters, and even to specifying their mathematical structure.

5. So, if you are interested in non-separable MFs then, as we discussed, I think you need to begin back at T1 FSs and fuzzy systems/clustering. If headway cannot be made at the T1 level, then to me it is futile to consider the IT2 level.

Sorry that I can not be positive about this line of research.

Regards.

Jerry