Thesis corrections

4 messages

From: Simon Shaw <S.Shaw@bath.ac.uk>
To: dave@ninepointeightone.net
Date: Monday, 30 January 2012 13:03:06
Subject: Thesis corrections

Hi David,

I hope you have had a smooth journey to New York. Further to the viva last week, Richard and I have a number of amendments to the thesis which are aimed at improving the structure and precision of it. The deadline for completion of the corrections is 27th April 2012 and these should be confirmed with me via a revised copy of the thesis, together with a list of the changes made in response to each of our requests. If there's anything that's not clear, or you want further details then do ask.

The main amendments required are as follows:
• Correct the minor mathematical and grammatical errors throughout the thesis (lists of the ones that we have spotted are attached).
• Rewrite the explanation of splines in Section 1.1.3 as a coherent logical argument: the structure, as you explained in the viva, should go something like “with a penalty of the form (1.6), the solution to the minimisation problem (1.3) is of the form (1.5)” – similarly for the explanation of cubic splines later in the section. We don’t insist on similar changes being made throughout the thesis, but we think it is important that the candidate can demonstrate the ability to present difficult methodology in a clear and structured way, and this section provides a good opportunity to do so.
• Chapter 1 in general needs to be fleshed out, so as better to set the stage for the remainder of the thesis. For example, the soap film smoother is mentioned almost parenthetically at present, whereas it is adopted as a benchmark for the remainder of Part 1 of the thesis. We do not necessarily ask that all of the details are moved from Chapter 2 (where they appear at present) to Chapter 1: however, some intuition needs to be given, and the key role of this technique needs to be made clear. This would also provide the opportunity to motivate the inclusion of Chapter 2 much more convincingly: the chapter can be presented as a detailed introduction to, and illustration of, the use of the soap film smoother which then sets the stage for the subsequent development.
• Throughout the thesis, we would like you to be clear about what software is being used: at present, it is not always clear whether you are picking up and running with “off-the shelf” software (which turned out to be the case for the Schwarz-Christoffel transform) or whether you had to write new code yourself. The work of others should always be duly acknowledged; and you shouldn’t be shy about advertising your own contributions!
• In Chapter 4, the discussion of the “adjustment” {\cal L} needs to be clarified to make clear that it is heuristic: at present, it is presented as somehow deeper than this. As discussed during the oral examination, one possibility would be to start by considering the idea of using the Jacobian of the transformation, explaining why (as indicated by the candidate during the oral) this didn’t work, and then moving on to the “engineering” solution.
• Chapter 7 needs to be restructured: at present the summary appears in Section 7.8, and is followed by two additional sections!

I'd be grateful if you could confirm safe receipt of this email and the two attachments.

Best wishes,

Simon.

Phd thesis "On smooth models for complex domains and distances" by David Miller — list of minor corrections from external examiner

1. P26, line 4: "this data" ⇒ "these data". Similar instances of "data" being treated as singular can be found throughout the thesis, for example: p52, lines 17 and 18 (two instances); p159 line -9; p162 line 5; p163 line 10; p169 lines -6 to -5; p202 line 9; p213 line 10.
2. P26, half-way down "In both of these examples ...": you talk about an "underlying process" when you mean "an underlying mean", "regression function" or "trend surface". This is an example of the sloppy use of vocabulary, discussed in the viva.
3. P28, last sentence of §1.1.1: "complimentary" ⇒ "complementary".
4. P29, line -10: "effect" ⇒ "affect". Ditto caption to Figure 1.2; p66 line 13; p227 line 6.
5. P30: the caption to Figure 1.2 claims that the fit in the middle panel interpolates the data, but as plotted it clearly doesn't.
6. P34, paragraph 2: explain the difference between thin plate splines and thin plate regression splines? (or if you're using the terms interchangeably, don't!).
7. P38, line 6 of §1.1.4: "datum" ⇒ "data". "Datum" is correct in the next line though.
8. P39, bottom line: should read "$\ldots V(\cdot)$, such that $\mathrm{Var}(Z_i) = \phi V(\mu_i) \ldots$".
9. P40: half-way down the page, I suspect the Hardin and Hilbe reference does *not* cover PIRLS — IRLS maybe. Line -9: how is $\mathcal{V}_\theta$ defined in the generalised case? What about other methods of smoothing parameter selection — doesn't `mgcv` use a different approach for distributions without a dispersion parameter?
10. §1.3, title: "practise" ⇒ "practice". Ditto p183, line -3.
11. P42, line before (1.9): typo "esimated". A few lines later, typo "to analysing the results ...".
12. §1.3.2: the definition of the Brier score at (1.10) is incorrect I think: it should have the observations in it. The quoted expression is simply the MSE for the estimated probability surface. From this perspective, there is nothing special about the binary case.
13. §1.3.4: explain the rationale for thinking of $\mathrm{tr}(\mathbf{A})$ as effective degrees of freedom (it is merely a useful analogy with the linear model case, where the trace of the hat matrix does indeed evaluate to the length of the coefficient vector — as you started to explain in the oral examination)

On smooth models for complex domains and distances: list of minor corrections

Simon Shaw

January 30, 2012

1 Notes on Chapter 1

- p29 Need $\cdots$ between the integrals in (1.3) and (1.4).
- p29 Reference to Wood (2006: p126) refers to the incorrect page.
- p30 Equation for S_{ij} needs $\cdots$ between the integrals. Also, I'm assuming that $\mathbf{b}_i$ and $\mathbf{b}_j$ are the basis functions are given in (1.1). In which case, they should not be bold.
- p32 "Say we put" is a bad way to start a sentence.
- p34 "practise" should be "practice". There are a few other examples of this throughout the thesis which should also be corrected.
- p34 For the P-splines derivation, the initial use of $x_{(1)}$ isn't compelling, particularly when the $B_j^{[0]}$ are defined in terms of x. Additionally, you change from $x_{(1)}$ to x_{1i}. The summation in the basis representation of f is incorrect whilst your statement of the $B_j^{[0]}$ is also incorrect (4 terms!).
- p35 I think the objective function is incorrect, in particular the penalty function.
- p35 Reference to Section 1.1.3: you are still in Section 1.1.3.
- p36 The statement of f is incorrect.
- p36 β_j and δ_j should be defined in relation to the form of $f(x)$.
- p36 In Chapters 2 and 3, cyclic cubic splines are used so there should be some discussion of these here.
- p36 Consistency of notation: you use both $\hat{f}^{-}(x)$ and $\frac{\partial^2 f(x)}{\partial x^2}$ here.
- p37 Incorrect double use of j as subscript for tensor products. The model used in Chapter 2 uses different dimensions for the basis size for each direction so that approach should be adopted here.
- p38 Equation (1.8): what is $\hat{\mathbf{f}}$ and why is it a vector?

From: David Lawrence Miller <dave@ninepointeightone.net>
To: Simon Shaw <S.Shaw@bath.ac.uk>
Date: Tuesday, 31 January 2012 17:07:09
Subject: Re: Thesis corrections

Dear Simon,

I'll attempt to get this all back to you well before that date. I might have to come back to you about individual points but I'll try to minimize the number of times that I do that, of course.

best,
--dave

On Monday, 30 January 2012 at 13:03, Simon Shaw wrote:

> Hi David,
> I hope you have had a smooth journey to New York. Further to the viva last week, Richard and I have a number of amendments to the thesis which are aimed at improving the structure and precision of it. The deadline for completion of the corrections is 27th April 2012 and these should be confirmed with me via a revised copy of the thesis, together with a list of the changes made in response to each of our requests. If there's anything that's not clear, or you want further details then do ask.
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> Best wishes,
> Simon.
> Attachments:
> - Miller_ExternalCorrections.pdf
> - miller1.pdf

From: Simon Shaw <S.Shaw@bath.ac.uk>
To: David Lawrence Miller <dave@ninepointeightone.net>
Date: Wednesday, 1 February 2012 10:44:35
Subject: Re: Thesis corrections

Hi Dave,

Not a problem. Oh, just one other thing that you should add to the thesis: in the acknowledgements (if it isn't elsewhere) you should thank whoever (EPSRC?) funded you.

Best wishes,

Simon.

David Lawrence Miller wrote:

> Dear Simon,
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> I'll attempt to get this all back to you well before that date. I might have to come back to you about individual points but I'll try to minimize the number of times that I do that, of course.
>
> best,
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From: David Lawrence Miller <dave@ninepointeightone.net>
To: Simon Shaw <S.Shaw@bath.ac.uk>
Date: Wednesday, 8 February 2012 12:03:21
Subject: Re: Thesis corrections

Simon,

I'm making some headway on this but I had a few questions.

1) I'm generally finding that both your comments and Richard's are just adjustments I need to make (i.e. I don't disagree with the points made). Do you want me to make a note of what I've done, or will you just run down the list? (I could also provide a diff of the text files, though that might not be very human-readable...)

2) In chapter 3, second point, you reference page 48, I think this is the wrong page (since page 48 isn't in chapter 3). Can you tell me which page you mean?

3) Is it acceptable for me to directly contact Richard regarding any questions I have about his comments or should they go through you?

4) In terms of procedure once I'm done, I'll send you a PDF. Then you (and Richard?) will check the thesis again (presumably sending it back if I've missed anything). Once that's done I need to have it printed/bound, then wait for the relevant paper work? (Sorry I realise that I asked you this in person and I should have written it down.)

I'll keep going and consolidate any remaining queries so I don't bother you too much.

best,
--dave

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