[mitml2016](#)
MIT Machine Learning Fall 2016
Sep 9 , 2016 - Dec 31, 2016, Cambridge, USA

Reviews For Paper

Track	Homework 1
Paper ID	114
Title	6.867: Homework 1

Masked Reviewer ID: Assigned_Reviewer_1
Review:

Question	
Detailed Comments	Overall, the paper was quite good. For each of the methods they were asked to address, the authors chose several representative instances, carried out the relevant computations, summarized the data effectively, and drew meaningful conclusions from the results. The use of tables, figures, and plots helped me to visualize the authors' findings; as a whole the graphics were very well done. The writing in the paper was strong overall, and I felt the authors had a good understanding of the where these methods fit in the context of the class/in machine learning as a whole. However, I think there are some issues which if resolved would improve the paper greatly. First, the writing is concise to the point of being terse. It does not appear the authors were having problems with the six page limit, so some additional elaboration would have improved clarity and allowed for a more detailed discussion of their methodology. Second, the paper includes all of the figures and tables at the end as opposed to in the text. This is an effective space saving measure, but makes the paper difficult to read since one must go back and forth between the text and the appendix. Finally, the paper would benefit from a more informative title than "6.867 Homework 1".
1. Implement Gradient Descent - Content	Outstanding
1. Implement Gradient Descent - Clarity	Outstanding
2. Linear Basis Function Regression - Content	Good
2. Linear Basis Function Regression - Clarity	Good
3. Ridge Regression - Content	Outstanding
3. Ridge Regression - Clarity	Good
4. Sparsity and LASSO -	

Content	Outstanding
4. Sparsity and LASSO - Clarity	Good

Masked Reviewer ID: Assigned_Reviewer_2
Review:

Question	
Detailed Comments	The assignment asked for the paper to be written as a "readable paper" such that "it [can] be read by someone who has taken a class in machine learning but has not read this assignment handout." It seems like you divided your paper by question number, which may be improved by customizing the divisions according concepts you wrote about and including some sort of introduction and/or conclusion. (I only applied this to the clarity score for the first section.) Another general point for improvement is that you could analyze your results and explain how they illustrate the concepts. For example, in section 2.3 you mention things like "M = 10 which overfitted the data," "Stochastic descent failed to converge," and "both methods break down." You could try to reason why certain regressions overfit or why gradient descent fails to converge (what specific properties of the gradient function cause this). For reference, the homework says, "Explain your results in terms of the properties of the function being optimized and the properties of the algorithms." I think you could use these sorts of analyses to really tie your paper together and make it flow more continuously. I think you did a nice job of this in section 3, where there were some instances of laying out connections between observations, such as this whole paragraph: "We observed that increasing λ will eventually drive regression coefficients (the weight vector) to zero. This is why the regularizer here is known in machine learning literature as "weight decay". When M increases, the order of the polynomial is higher, which means that the line is likely to overfit to the training data." Overall, I think your use of LaTeX was great with equation numbers and correct figure references/links, but your headers and writing tone did seem to vary between the first and second half of the paper. As a whole, the paper was well-polished and complete!
1. Implement Gradient Descent - Content	Outstanding
1. Implement Gradient Descent - Clarity	Good
2. Linear Basis Function Regression - Content	Good
2. Linear Basis Function Regression - Clarity	Outstanding
3. Ridge Regression - Content	Outstanding

3. Ridge Regression - Clarity	Outstanding
4. Sparsity and LASSO - Content	Outstanding
4. Sparsity and LASSO - Clarity	Outstanding

Masked Reviewer ID: Assigned_Reviewer_3
Review:

Question	
Detailed Comments	Nice work! Your content and figures are pretty solid. They seem to demonstrate a through understanding of the given material -- I like how you use varied forms of visualization (heat maps, bar charts, tables, graphs) depending on the context. I will say that sometimes, the figures are hard to follow because there aren't descriptive captions or axis labels. I could guess what was going on in most cases, but especially to a reader who hasn't seen the problem set, it'd be much more difficult. In addition, I do find that the paper is rushed at points (it's more figures than text!). It would have been nice if the conclusions drawn from the figures are explained in the paper -- especially because some figures were hard to read, this made the paper hard to understand at points. For example, part 1.1 refers to figures 2a, 2b, and 2c without an explanation of what conclusions were made (albeit simple ones). In addition, this paper assumes that the reader knows what every variable means, which might not be the case. The explanations are clearer in the latter half of the paper.
1. Implement Gradient Descent - Content	Outstanding
1. Implement Gradient Descent - Clarity	Good
2. Linear Basis Function Regression - Content	Outstanding
2. Linear Basis Function Regression - Clarity	Good
3. Ridge Regression - Content	Outstanding
3. Ridge Regression - Clarity	Outstanding
4. Sparsity and LASSO - Content	Outstanding
4. Sparsity and LASSO - Clarity	Good