STAT 153 Project Checkpoint 3

Assigned: March 23, 2021

Due: March 31, 2021, by 11:59pm
(5% off per rounded-up hour late, like HW)

For the third project checkpoint, you will professionally format all of the content from checkpoint 2. Thus, you don't need to add any new sections to report if you completed checkpoint 2. (The next thing to write would have been your choices of ARMA models, however, we haven't covered everything you need yet, so we'll do that on checkpoint 4). While your prose need not be perfect at this point, your signal models should produce a stationary-looking residual process (or differences) and your formatting should be correct.

The following list contains the things that should be included on this checkpoint, though we won't be grading each of these. The graded criteria is listed at the end of this assignment.

- Includes everything from Checkpoint 2: PDF format, professional heading, and first half of paper's text. The first half of your paper should include the executive summary, exploratory data analysis (EDA) with a plot of raw time series, two signal models with plots of stationary-looking residuals.
- Professionally formatted figures:
  - Every figure has a caption describing the basics and any particular colors/line types/etc. Readers should be able to view the plot and understand it's general gist without reading the report body. There should be enough space between the caption and the body of the text so they are easily distinguished (this should be the default in the templates we have given you).
  - Every figure has a formal name (Figure 1, Figure 2,...), which is usually the first part of the caption. All references to the figure should be by the formal name to avoid any possible confusion. (Referring to "the plot above" is something I often do in informal writings, but this is a formal report).
  - Figures' axis labels are appropriate/formal, capitalized, and large enough to be easily read. Note: "data$cases" is not appropriate/formal, while "Number of New Cases" would be.
  - If titles are included, it should also be descriptive (general idea and distinguished from other figures) but brief (details should be in the caption) and capitalized. Some professional format don't even include titles; either way is fine for this report if done well and consistently across all figures.
  - Plots are large enough such that the points/lines/patterns are easily visible.
- No code or raw output. Only your text, figures, equations, tables, etc. should be present.
- All acronyms defined the first time you read them. For example: "The autocorrelation function (ACF) shows that..."
- Sections separated and appropriately/helpfully labeled. "Parametric + ARMA 1" is not appropriate, but "Parametric Signal with MA(3)" is.
- Formally references plots and tables, e.g. "Figure 1", "Table 2". So when discussing a plot/figure/table, there should be no ambiguity as to which you are discussing (e.g. "the right panel of Figure 2"). Points will be lost on the final report if you reference a plot and it's not clear which...
- Variables are written using mathematical symbols and syntax, not texts nor any non-math special characters. Furthermore, variables/etc. are all defined: don't assume Wt, Xt, Yt are known to the audience. Let me explain what is acceptable/okay. Discussing "white noise" is okay, and referring to W_t is okay after you've defined it (as white noise hopefully). "phi", "psi", and "theta" are not acceptable, but ϕ, ψ, θ are okay after you've defined them via equation or appropriate text (e.g. "The autoregressive coefficients ϕ_j are all negative...")

Please **review the project documents on bCourses** for further details! Particulaly for this checkpoint, note how the formatting is done on the LaTeX and RMarkdown examples (the LaTeX one is called "template" and the RMarkdown is the example project).

This checkpoint is worth **5 points** total, and it's simple to get full points because it is completion graded! The rubric/breakdown of these five points is:

1. No code or raw computer output is on your document.
2. Sections are all appropriately named and clearly marked.
3. The time series plot of the raw data in your EDA section is formally named (probably should be "Figure 1") and it is referenced by this formal name in the EDA body of text. {All figures should have formal titles, but we're only checking this one for credit.}
4. Signal model 1's residual plot (or differences plot) has a caption correctly done as described in the bullet points above. {All figures should have formal captions, but we're only checking this one for credit.}
5. Signal model 2's residual plot (or differences plot) has formal axis labels that are large enough to be legible, capitalized, are appropriately descriptive, and otherwise correctly done as described in the bullet points above. {All figures should have formal axis labels, but we're only checking this one for credit.}

If you have any questions, please ask!