

CODECHECK certificate 2020-015

<https://doi.org/10.5281/zenodo.3978402>





Item	Value
Title	A model for focal seizure onset, propagation, evolution, and progression
Authors	Jyun-you Liou  , Elliot H Smith, Lisa M Bateman
Reference	eLife 2020;9:e50927 https://elifesciences.org/articles/50927
Codechecker	Iain Davies 
Date of check	2020-08-04 10:00:00
Summary	All code to run the neural network models discussed in the paper was successfully executed. Some results could be read off these models in action. The code to reproduce the figures given in the paper had more difficulties, with only some figures successfully recreated.
Repository	https://github.com/codecheckers/Liou-and-Bateman

Table 1: CODECHECK summary

Output	Comment	Size (b)
codecheck/figures/Fig1_Model.png	Snapshot of model for manuscript Figure 1	32479
codecheck/figures/Fig5_Model.png	Snapshot of model for manuscript Figure 5	14081
codecheck/figures/Figure1.png	Manuscript Figure 1C	19928
codecheck/figures/Figure2.png	Manuscript Figure 2A, 2B and 2C	75421
codecheck/figures/Figure6.png	Manuscript Figure 6A	17335
codecheck/figures/Figure7.png	Manuscript Figure 7A and 7B	50420

Table 2: Summary of output files generated

Summary

The original authors provided code to run all the neural network models in their Github repository. This was all successfully executed however this code only plotted model variables changing in time and not the

figures in the original paper. Prof Liou graciously provided the code to create the actual figures, however much of this could not be run as it relied on his computer pathways. The figures that were able to be recreated matched those in the paper.

CODECHECKER notes

The original model code was stored at the Github repo here: <https://github.com/jyunyoliou/LAS-Model>. I cloned this repo from a Linux terminal and opened a MATLAB console. The models corresponding to each experiment were then run by simply executing Exp1, Exp2, etc from the console. These each brought up a realtime plot of four model variables: " V ", " ϕ ", " Cl_n " and " g_k ". For experiments 1, 6 and 7 these were 2D plots, whilst for experiments 2, 4 and 5 these were 1D plots. Snapshots of the models from experiment 1 and 5 are given below in Figure C1 and Figure C2 respectively.

However, these plots of the models are not the figures given in the paper. Instead, the figures process data from multiple simulations of the models and present the data in accessible formats. Prof Liou very promptly provided us with the code he used to create these figures, which I added to the cloned repository. These are the scripts named Fig1.m, Fig2.m etc. However, none of these could be run to completion since they all depended on other files, schematics or data that he had on his computer in other pathways. Some of the figures were able to be recreated, namely the manuscript figures 1C, 2A, 2B, 2C, 6A, 7A and 7B, which are all recreated in the figures below. These matched the features displayed in the paper.

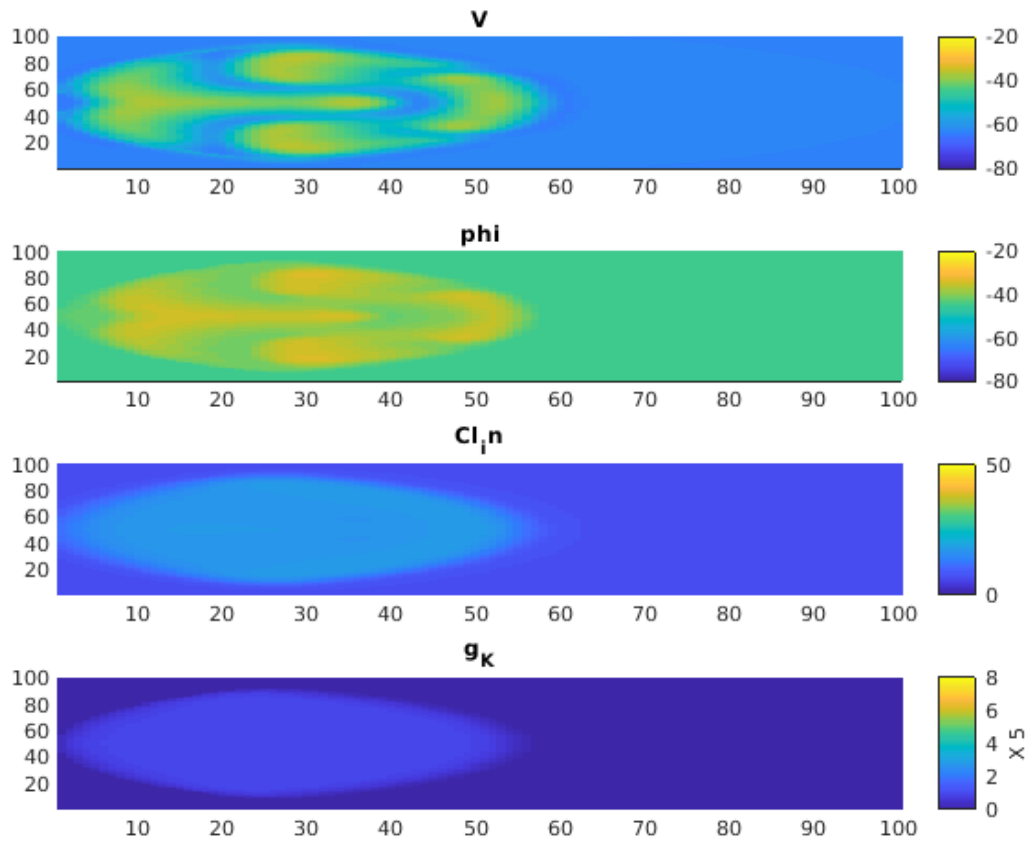


Figure C1: Snapshot of model for manuscript Figure 1

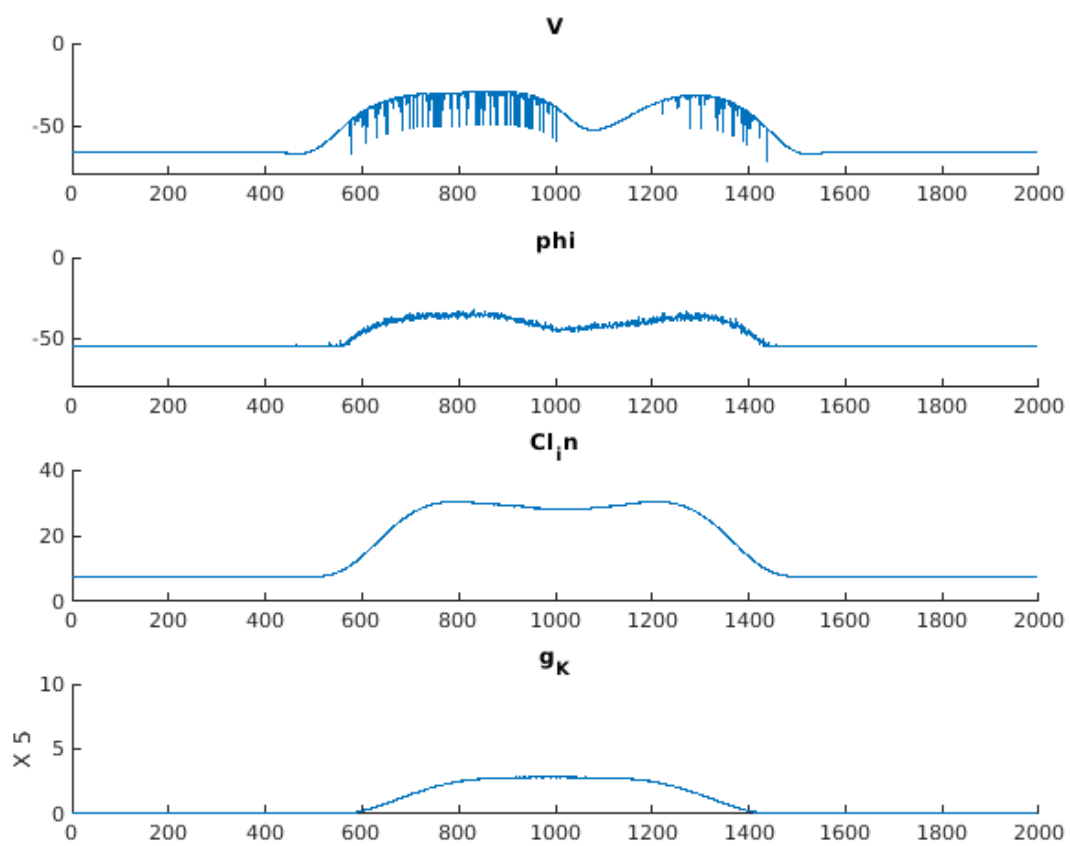


Figure C2: Snapshot of model for manuscript Figure 5

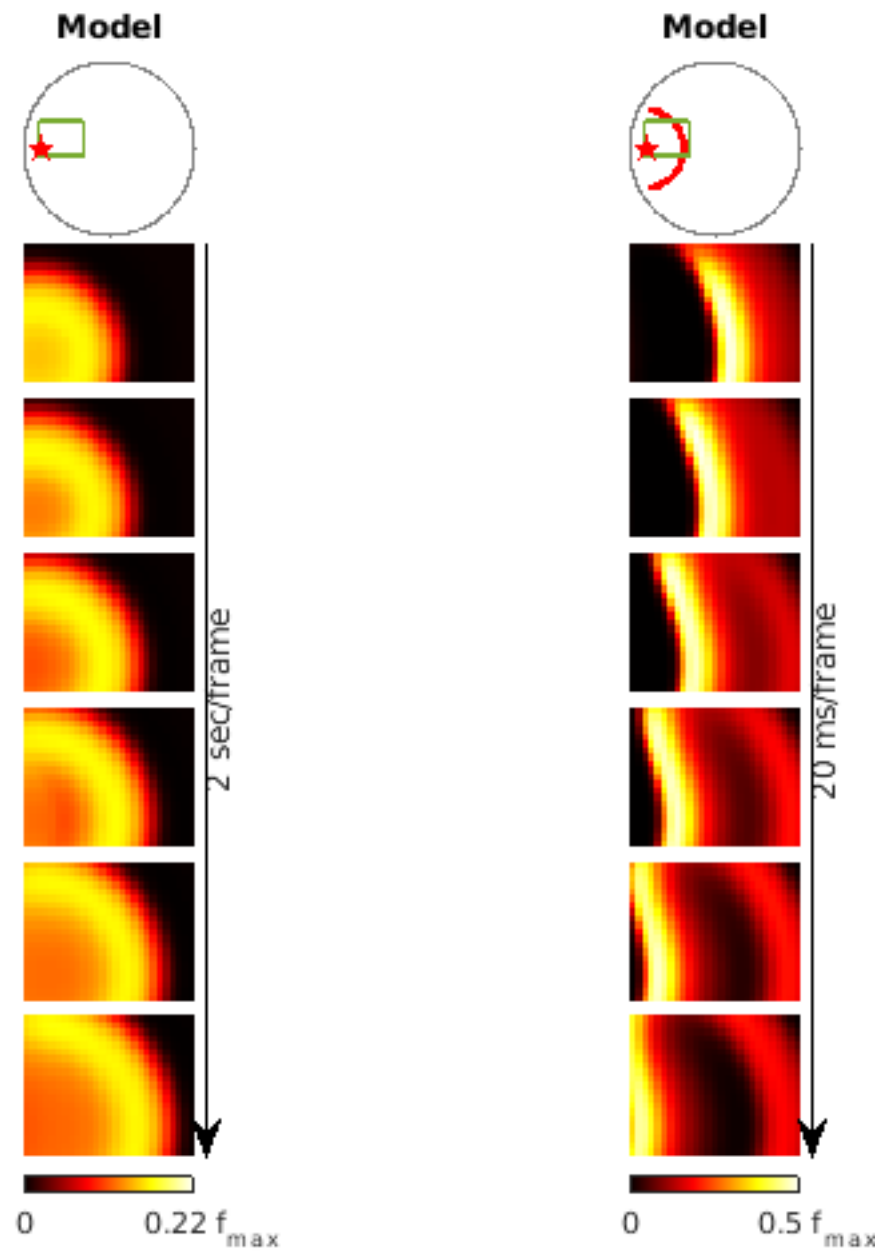


Figure C3: Manuscript Figure 1C

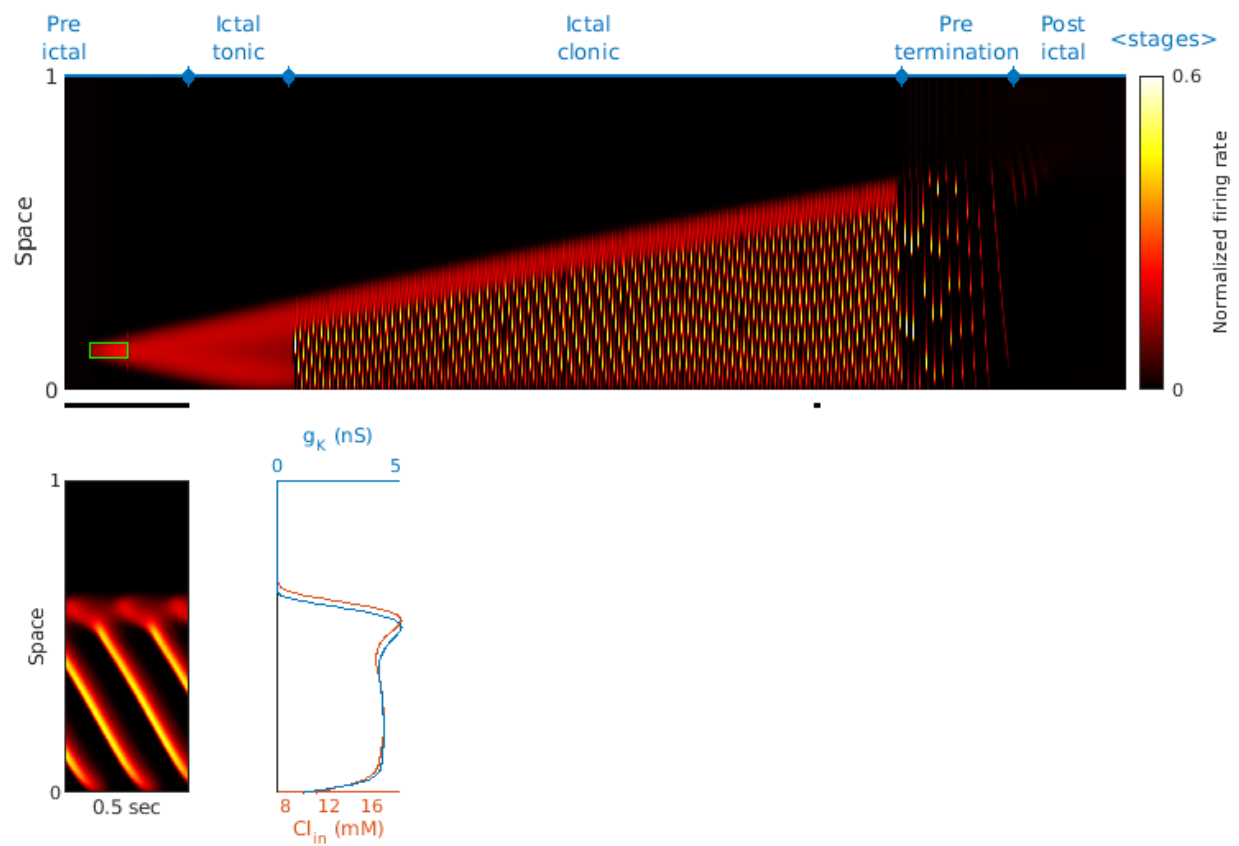


Figure C4: Manuscript Figure 2A, 2B and 2C

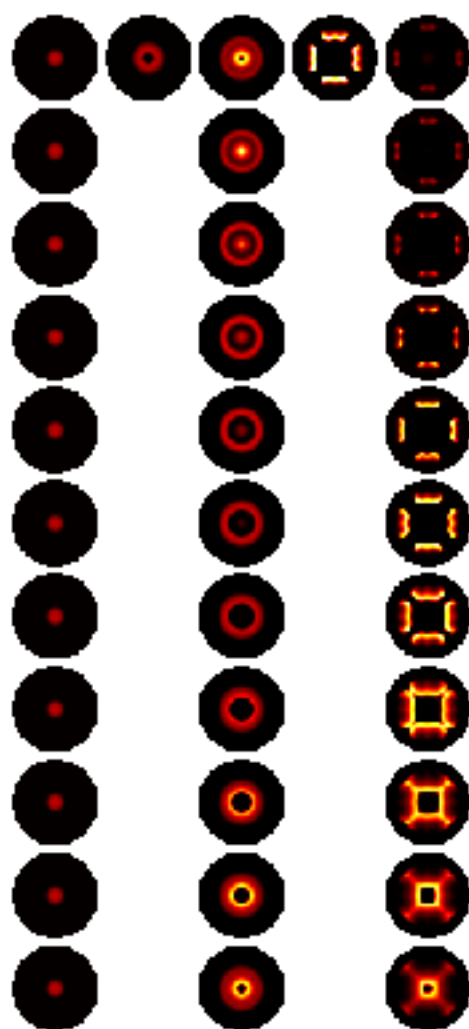


Figure C5: Manuscript Figure 6A

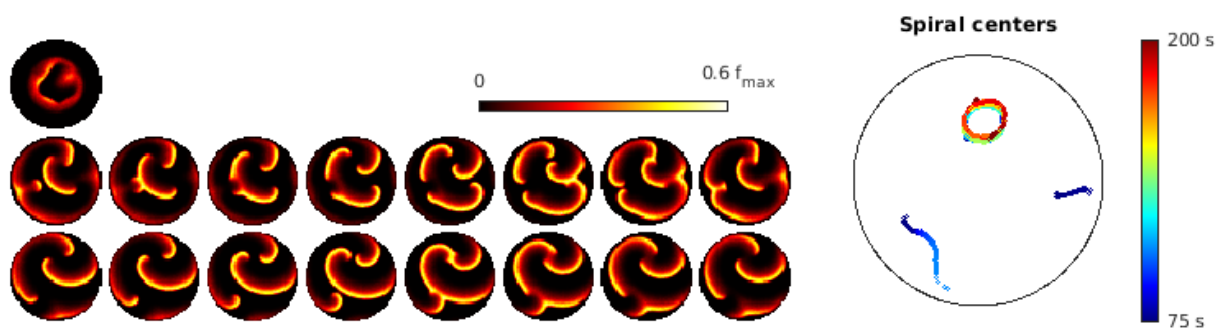


Figure C6: Manuscript Figure 7A and 7B

Acknowledgements

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Citing this document

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About CODECHECK

This certificate confirms that the codechecker could independently reproduce the results of a computational analysis given the data and code from a third party. A CODECHECK does not check whether the original computation analysis is correct. However, as all materials required for the reproduction are freely available by following the links in this document, the reader can then study for themselves the code and data.

About this document

This document was created using **R Markdown** using the **codecheck** R package. `make codecheck.pdf` will regenerate the report file.

```
sessionInfo()
```

```
## R version 3.6.3 (2020-02-29)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 16.04.5 LTS
##
## Matrix products: default
## BLAS: /usr/lib/openblas-base/libblas.so.3
## LAPACK: /usr/lib/libopenblas-r0.2.18.so
##
## locale:
##  [1] LC_CTYPE=en_GB.UTF-8      LC_NUMERIC=C
##  [3] LC_TIME=en_GB.UTF-8      LC_COLLATE=en_GB.UTF-8
##  [5] LC_MONETARY=en_GB.UTF-8  LC_MESSAGES=en_GB.UTF-8
##  [7] LC_PAPER=en_GB.UTF-8     LC_NAME=C
##  [9] LC_ADDRESS=C             LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_GB.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets
## [6] methods    base
##
## other attached packages:
##  [1] readr_1.3.1      tibble_3.0.3
##  [3] xtable_1.8-4     yaml_2.2.1
##  [5] rprojroot_1.3-2  knitr_1.29
##  [7] codecheck_0.0.0.9005 parsedate_1.2.0
##  [9] R.cache_0.14.0   gh_1.1.0
```

```
##
## loaded via a namespace (and not attached):
## [1] Rcpp_1.0.1      magrittr_1.5      hms_0.4.2
## [4] R6_2.4.1        rlang_0.4.7       fansi_0.4.1
## [7] highr_0.8        stringr_1.4.0     httr_1.4.2
## [10] tools_3.6.3     xfun_0.15         R.oo_1.23.0
## [13] cli_2.0.2        ellipsis_0.3.1    htmltools_0.5.0
## [16] assertthat_0.2.1 digest_0.6.25      lifecycle_0.2.0
## [19] crayon_1.3.4     vctrs_0.3.2       R.utils_2.9.2
## [22] glue_1.4.1       evaluate_0.14      rmarkdown_2.3
## [25] stringi_1.4.6    pillar_1.4.6      compiler_3.6.3
## [28] backports_1.1.4  R.methodsS3_1.8.0 jsonlite_1.7.0
## [31] pkgconfig_2.0.3
```