# README (release 17 July 2023)

**1. Exercises**: The text documents in these folders describe a set of exercises that are meant to accompany the chapters in the book. They are designed to be self-explanatory and generally tutorial in nature. Sometimes toward the end of an exercise set there are suggestions for more advanced, open-ended projects. The book, when combined with these exercises, could form the backbone of a course on the topic of the critical point and the cortex. Such a course could also draw on student-led discussions the current literature, which has been expanding rapidly lately.

**2. Programs**: The exercises require Matlab programs and a toolbox that are included in the folder for each chapter. You should copy these programs into your Matlab Work directory or place them in a folder that is on your Matlab path so they can be accessed.

While these programs have been tried many times, there is of course the likelihood that bugs remain. Any suggestions for improvements are welcome and should be emailed to me at jmbeggs@iu.edu with the words "CriticalCode" in the subject line. Thanks for all suggestions!

**3. Data**: In the folder named "DataSets" there are currently three types of data. The subfolders are entitled "OrganotypicCultures," "DissociatedCultures," and "LFP60data." Organotypic culture data contains spikes from cortical slice cultures placed on a 512-electrode array. Each data set is about 1 hour long. Dissociated culture data comes from primary cell cultures that grew on a 60-electrode array. These are spike data as well, and the recordings vary in length but are usually around 1 hour long. Local field potential data that were recorded on the 60-electrode array come from acute cortical slices that were bathed in solutions to make them active. These data sets do not contain spikes but include the times at which local field potentials crossed a threshold and are usually about 1 hour in duration.

At present, all of these data were recorded in the Beggs lab. The book gives links to other data sets that are open-source. Over time, I hope to include data from other investigators on this site as well. Many of the exercises call on these data to be analyzed in various ways, as the exercises explain.

**4. Updates**: The folders now contain exercises for chapters one through seven of the book. There are several exercises I still want to add to this collection; I hope to add this material in the near future. In addition, bug fixes and more data sets are also expected to make this a resource that will expand over time. For that reason, each installment will be dated as in the title above.