1. Preface
2. Introduction
   1. Background to the fields of machine learning and survival analysis. Small review of literature highlighting that no text exists to summarise the field. Demonstration of applications and why this is timely.
3. Statistical Learning
   1. Quick overview to statistical/machine learning and required concepts for this book. Highlight that machine learning knowledge required is the same as for classification and regression, therefore recommend ISL as a full primer.
4. Survival Analysis
   1. Overview to survival analysis including censoring, truncation, competing risks, assumptions, and applications. Definition of survival analysis as a machine learning task. Definition of prediction types.
   2. Demonstration in code (R and/or Julia).
5. Semi- and Fully-Parametric Models
   1. Definition of non-parametric models including differences between conditional and unconditional methods. Overview to life tables and history. Focus on Kaplan-Meier and Nelson-Aalen with some consideration for Akritas Estimator and other methods.
   2. Definition of parametric models including differences between semi-, and fully-parametric models. Definition of Cox model including interpretation and fitting. Discussion of prediction types and how this affects interpretation and use-cases. Definition of PH and AFT models more generally as well as PO models and flexible splines. In order to not be duplicative of Collett (2014) focus will be on requirements for ML, i.e. data inputs, model structure, considerations for data types (e.g. suitable for high-dimensional data?).
   3. Exercises in R and/or Julia.
6. Tree-Based Methods and Random Forests
   1. Definition of tree-based and random forest methods. Extension to survival analysis. Review of literature on the topic and available software.
   2. Exercises in R and/or Julia.
7. Support Vector Machines
   1. Definition of support vector machines. Extension to survival analysis. Review of literature on the topic and available software.
   2. Exercises in R and/or Julia.
8. Boosting Methods
   1. Definition of boosting methods. Extension to survival analysis. Review of literature on the topic and available software.
   2. Exercises in R and/or Julia.
9. Neural Networks
   1. Definition of neural networks methods. Extension to survival analysis. Review of literature on the topic and available software. Due to scale of the field this will likely be restricted to generic mathematics and will not go into extensive detail around model architecture.
   2. Exercises in R and/or Julia.
10. Evaluation and Interpretation
    1. Definition of calibration, discrimination, scoring rules, and in-sample metrics for survival analysis. Consideration to limitations of metrics including applicability to machine learning. Ethical considerations of machine learning evaluation and how to interpret survival models.
    2. Exercises in R and/or Julia.
11. Alternative Modelling Approaches
    1. Overview to Bayesian methods for machine learning survival analysis. Brief review of the literature and highlighting prominent examples. Overview to available in software.
    2. Overview to Reduction and Discrete-Time Methods including stacking methods, survival to regression and classification reduction, and connection to poisson regression.
    3. Exercises in R and/or Julia.
12. Survival Extensions
    1. Extensions to left- and interval-censoring and truncation. More detailed definitions of other censoring types as well as biasing unique to these areas. Clear discussion as to why methodology is so limited in this area and possible ways to overcome it.
    2. Extensions to competing risks. Discussion as to why methodology is limited but how reduction methods can be simply utilised to make use of all existing methodology.
    3. Exercises in R and/or Julia.
13. Software
    1. Overview to existing software in Python, R, Julia
    2. Code demonstrations and links to resources
    3. Final exercises across programming languages