My name is Brian Ling and I am an Assistant Professor in the Department of Mathematics and Statistics at Queen's University.

My research focuses on statistical methods used in survival analysis and shape-constrained inference. In particular these are some examples of the problems I would like to solve.

Problem 1 Interval-censored data arise when a response or failure event is known only to occur within a specific time interval. This is a prevalent data structure in various clinical trials and longitudinal studies with periodic follow-up. It is known that the nonparametric maximum likelihood estimator converges to the true distribution rather slowly. Imposing a shape constraint, such as log-concavity, offers a middle ground between parametric and fully nonparametric approaches. It is of interest to develop inference procedures and goodness-of-fit tests. The study of these problems requires knowledge of empirical process theory, asymptotic statistics, optimization theory, and programming skills.

Problem 2 For interval-censored data, the ascertainment of a subject's current status based on a screening test may not be perfect, resulting in misclassified data. Similar to the case without misclassification, the nonparametric maximum likelihood estimator is a step function and converges slowly. It is of interest to develop more efficient estimators based on different smoothing procedures and to develop an inference procedure. The study of these problems requires knowledge of empirical process theory, asymptotic statistics, optimization theory, and programming skills.

If you find any of these problems interesting or would like to hear more about my research, do not hesitate to contact me at brian.ling@queensu.ca