

UQ Summer or Winter Research Project Description

Please use this template to create a description of each research project, eligibility requirements and expected deliverables. Project details can then be uploaded to each faculty, school, institute, and centre webpage prior to the launch of the program.

Project title:	Estimating parameters for g-and-h distribution families
Hours of engagement & delivery mode	Project Duration: 4 weeks Hours of engagement: 30 hours per week Offered: on-site
Description:	The g-and-h distribution families are an interesting group of flexible probability distributions, defined through quantile functions, that can be used to model data with varying degrees of skewness and kurtosis. There is no standard way to estimate the parameters for these distribution families, instead there are several approaches that researchers use. This project aims to compare some parameter fitting methods for different g-and-h distribution families. The successful applicant will write code to implement different fitting methods in R, and apply this to real and simulated data.
Expected learning outcomes and deliverables:	<p>Expected outcomes:</p> <ul style="list-style-type: none"> • Develop familiarity with g-and-h distributions and more generally, quantile distributions • Develop an understanding of common and uncommon methods of parameter estimation • Develop skills for writing R code and packages <p>Deliverables:</p> <ul style="list-style-type: none"> • An R package for fitting multiple g-and-h distribution families to data • A short report documenting the work done and results • This work may contribute towards a manuscript suitable to be submitted for publication
Suitable for:	Students must have knowledge of <ul style="list-style-type: none"> • Calculus • Probability including probability distributions • Coding in R, or strong python skills and a willingness to learn R
Primary Supervisor:	Dr Mel Robertson-Dean
Further info:	If interested in this project, please email Mel (m.robertsondean@uq.edu.au) to discuss.