

# Appendix A

## Software

This appendix outlines the computer code utilized in Chapters 4, 5 and 6. All the programs are available on-line at

<http://www.stat.cmu.edu/~brian/mariano-hrm/>

and are written in C++.

The original C++ code to fit the HRM via MCMC was composed by Matt Johnson in 1999. I have updated this code for accuracy and efficiency in 2000, 2001 and 2002.

The code is comprised of 5 component files:

<code>hrm.cpp</code>	contains the main algorithm.
<code>hrm.update.cpp</code>	contains functions which perform the Metropolis-Hastings updates.
<code>PCM.hpp</code>	contains object structures for item, examinee and matrix objects.
<code>hrm.pcm.cpp</code>	contains functions which calculate probabilities under Masters' (1982) partial credit model.
<code>rngen.cpp</code>	contains functions for random variable generation under various distributions used in <code>hrm.cpp</code> and <code>hrm.update.cpp</code> .