As technology becomes increasingly more pervasive in research and clinical practice, I believe it is becoming more important for undergraduate students in the speech and hearing sciences to be exposed to signal processing and programming concepts. Exposure to these topics will help broaden their education, and make them savvier with the array of signal processing techniques that is so prevalent in modern speech/hearing technologies.

My background is in electrical engineering. However, through my research work, I have become more and more involved in the field of hearing science. Recently, I taught a course in electroacoustics and calibration for first year Doctorate of Audiology students. While the course was ideally suited to include computational exercises, the time needed to teach basic programming skills far outweighed the amount of time available. This is when I realized that if the students had entered graduate school with some basic insight in computation, they would probably be much better equipped to understand the technologies that underpin much of clinical practice.

In my experience as a researcher in the hearing sciences, I have come to realize that those researchers who have a background in programming are at an edge over those who are not technically-inclined. While it does not exclude the non-technical researcher from being able to do great research, what I have observed is that those who are more technically-savvy are at a much greater advantage than those who have to rely on others to help with programming. With increasing amounts of research relying on new software being developed, one can easily argue that the next generation of hearing research scientists need to be equipped with these skills in order to succeed.

I see a number of barriers to the integration of the teaching of computation in the speech and hearing sciences:

* Speech and hearing science courses are traditionally not considered to be computational courses.
* Courses are typically taught at a high level, where ideas, models and theories are explained through descriptive language, rather than through the use of mathematics which is more amenable to the teaching of computation.
* The teaching of programming is seen to be beyond the scope of most speech and hearing courses and computation is not seen as relevant to fundamental hearing and speech studies.
* Most of the faculty in the speech and hearing sciences are not comfortable teaching programming.

However, traditional some undergraduate subjects such as speech acoustics, and fundamentals of hearing science are amenable to modification in order to introduce some basic aspects of programming and computation. Very basic ideas in digital signal processing such as sampling and filtering can easily be included in the courses to demonstrate some of the basic principles that govern modern speech and hearing technologies. Ideally, a course dedicated to speech and hearing technologies would be introduced at a senior level in the undergraduate curriculum to fully immerse the student in basic engineering principles. It is my goal to incorporate programming practice and basic signal processing techniques into some of the courses I teach, to demonstrate the importance of these principles for future speech and hearing scientists, and practitioners.