

## Case Study 1- Amanda and the Code Breakthrough V 1.0

After accepting her postdoctoral position at a prestigious University, Amanda was keen to make an impression. One of the inexperienced and most junior graduate students in the group, Jeff, had been working on a stubborn numerical issue for well over six months, and Amanda thought she could help break through the logjam. Jeff didn't have much experience debugging code, and Amanda considered herself a black-belt Python expert.

Not wanting to raise expectations she could not meet, however, Amanda secretly worked hard on the problem for two weeks, including nights and weekends and with little sleep, and then had a breakthrough. She convinced herself that it worked, and triumphantly presented her code validation and verification results at the next group meeting. The faculty member was delighted, and congratulated Amanda on making such rapid progress. Amanda looked around the room to receive her well-deserved accolades, and was a bit surprised to see that Jeff (the graduate student) looked rather unhappy. The PI told Jeff to download and run Amanda's well-documented code on the full data set, and to send Amanda the results. Jeff dutifully did so. He sent Amanda the numerical results in an email with just a subject line "the results you wanted are appended", and no message.

Keen to continue making a good impression, Amanda quickly made the relevant plots, wrote up a first draft of the paper, and emailed the draft to the group's PI. Since she had provided the key intellectual insight, as well as the code that produced the main results, she listed herself as the first author. She felt good when she listed the graduate student, Jeff, as the second author. After all, he deserved it. Seemed a nice guy, too. Amanda was also pleased they had beaten their European competitors. She had heard rumors that the Europeans were on the verge of submitting their own results, and she was worried about getting scooped.

Two days later Amanda received an email from the group PI that requested a meeting. Oh good, she thought, he's going to give me comments on the draft and then we can submit the paper. She exchanged a couple of emails with the PI to set up a meeting the following week. Given how well things were going, that afternoon she posted the draft paper on the arXiv. After all, they could always fix up any minor issues during the referee process, right? And this way they could establish having clearly beaten the Europeans. Amanda went to bed that night for some well-deserved rest, feeling very good about how well things were going and fell asleep wondering about when she should start applying for faculty jobs...

Three days later, after the PI had returned from yet another trip, Amanda went to the PI's office for their meeting. Amanda was rather surprised to find the Department Chair and the Department's graduate program administrator in the room. Her surprise turned to shock when the PI said "Amanda, my student Jeff has accused you of academic misconduct, appropriating his main thesis problem and then claiming his numerical results as your own work. This could be the end of your promising career. What do you have to say in your defense?"

1) Did Amanda make any ethically inappropriate decisions? Be specific and make a flow chart of the process described in the narrative, identifying any bad decisions that led to problems later on.

2) Are there instances of Amanda gradually slipping into an awkward situation, as opposed to facing distinct decision points?

3) What should Amanda do, at the point our story ends? What are her options and how should she decide on a course of action?

4) What should she have done differently, and what clues she should have noticed, to avoid this situation? What lessons do you draw from Amanda's bad experience?