Ten simple rules for building Master's of Data Science program

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Abstract

The University of British Columba (UBC) Master of Data Science (MDS) program is a 10-month professional master's program in Data Science. The MDS program was launched in September 2016 and is offered by a collaboration between the UBC Department of Computer Science and Department of Statistics. It involves 24 one-month courses followed by a two-month Capstone Project. It has grown from 22 students with just under 100 applicants at its onset, to 120 students with over 2000 applicants in its most recent application cycle. In this article we document some of the things we think have been key to the success of building this successful program.

Introduction

- describe program and its history (pull from blog)
- document its measurable success
  - student body growth
  - admissions applications growth
  - spin-off programs at UBC (MDS-O, MDS-CL)
- document some testimonials
  - can we get these from the marketing team?

Ten simple rules

- we will flesh these out in the sprint

Rule 1: Engage (at least) statisticians and computer scientists - Think broadly about the definition of data science & Feed students their vegetables

Rule 2: teach current/authentic data science concepts, methods and tools & build courses from scratch & use real data sets

Rule 3: create a teaching team that is connected to each other and the entire curriculum & break down the walls between courses

Rule 4: reflect and iterate (time for redevelopment, academic retreats, not being scared of paperwork, capstone)

Rule 5: use evidence-based pedagogies for learning data science (live coding, flipped classroom, experiential learning)

Rule 6: use (and create?) open educational resources

Rule 7: Include meaningful group projects (group + projects = do together)

Rule 8: Scaffold a respectful and supportive community for learners

Having a respectful and supportive community for learners is fundamental for leveling the playing field across a group of heterogeneous learners - which is essentially any group of learners. Learner heterogeneity may be particularly higher in a Master of Data Science program given that students come from a wide variety of academic backgrounds. In a classroom where a respectful and supportive community is not built, only some learners who have certain privileges are likely to succeed. In such an unsafe environment, many learners lacking these certain privileges will become demotivated, frustrated, and feel alone. Their learning will suffer because of this, no matter how well the content is delivered by the teaching team.

One way to scaffold a respectful and supportive community is to use and enforce a code of conduct that clearly outlines what behaviors are not acceptable in our learning spaces, and a process for reporting a code of conduct violation. Importantly, providing contact details for a secondary reporting person is important, in case the person listed I as the reporting person (unintentionally) violate the code of conduct.

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Rule 9: Spend time with the students (contact hours, student-teacher ratios)

Rule 10: Engage your alumni

Every year we marvel at how amazing our students are. We're always sad to see them go in July, but they aren't actually gone - they are now MDS alumni! Our alumni are engaged with the program in a variety of ways. All alumni (including faculty/staff alumni) are members of the UBC MDS Alumni Slack, where people post jobs ads, ask/answer data science questions, and just generally

stay in touch. Beyond that, our alumni generously volunteer their time to give talks to current students (e.g. at orientation, or at an employer seminar or Capstone seminar), to participate in career-building events (e.g. conducting mock interviews with current students), to pair up with a current students as part of our mentorship program, or to partner with us for Capstone projects (it's always a delight to have MDS alumni on the other side of the table). Keeping alumni engaged with the program has benefits for both current students and alumni. Current students receive mentorship, wisdom, and employment opportunities. Alumni have an avenue to stay up-to-date on data science techniques, partner on Capstone projects, and hopefully hire some great data scientists. It's a big win for everyone.

Conclusion

- TBD

References