Teaching Statement

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Teaching Philosophy

I was very fortunate to participate in a program called Fundamentals of University Teaching during my graduate studies at the University of Waterloo, where I was able to early on reflect upon and eventually refine my own teaching philosophy around the concept of *active learning*. As a result, I strive to implement active learning in class through hands-on practice opportunities to engage students to think actively and work collaboratively to tackle real-life business problems. For example, students taking my "Database Systems" course have to design, implement, and put into production relational databases to support, among other cases, social networks, the operations of a pharmaceutical company, a logistics company, and an e-commerce retailer. By having real-life business scenarios coupled with hands-on activities, students are able to understand how information technologies enable different businesses and are used by different types of organizations in practice.

Active learning is also a crucial aspect of my "Managing Big Data" course. Besides several assignments where students practice how to collect and analyze unstructured data from various sources, students also have to complete a group project where they must define a big-data problem and design and implement a solution. The projects resulting from this course have been truly outstanding. For instance, a group of students investigated the impact of a Starbucks' corporate-social-responsibility policy by measuring how that policy affected consumers' sentiment towards the company. To analyze consumers' sentiment, the students collected data from Starbucks' Facebook page and applied a powerful, disruptive technology called IBM Watson.[1] The obtained results were so impressive that we wrote and published a paper in the Communications of the Association for Information Systems (Carvalho et al., 2019). Another group of students who took my big data course investigated some factors that drive Bitcoin trading activities. The resulting report was presented and published in the proceedings of the Annual Meeting of the Decision Sciences Institute (Jerdack et al., 2018).

The above stories illustrate the power of effectively teaching technical content to business-savvy students in a hands-on manner, *i.e.*, the power of active learning. They also highlight the fact that I constantly encourage students to produce relevant research work during the group projects, thus making them not only knowledge consumers but also

[1] Article about my course: https://miamioh.edu/fsb/fsbnews/?up=/news/170526142334+IBM-Watson-Carvalho-class.

effective knowledge producers. I believe these research skills are of tremendous value when students face and must solve complex business problems during their professional lives. Some other publications with undergraduate students resulting from coursework include articles on sentiment analysis (Carvalho and Harris, 2020; Carvalho and Xu, 2021) and blockchain technology (Gilcrest and Carvalho, 2018; Carvalho et al., 2020).

Beyond Classroom

One of my personal missions as a professor is to make sure my students are knowledgeable about the latest technologies and related disruptive business models. I envision the formation of world leaders able to design, implement, evaluate, and critically think about the implications of disruptive technologies. Much of my current educational efforts towards that goal are happening outside the classroom walls. To illustrate this, I wish to highlight my involvement with Miami University Blockchain Club (MUBC) and with Miami University Cybersecurity Club.

At the time of writing, MUBC has around 200 members, making it one of the most popular blockchain clubs in the country. Since its conception in 2017, I have served as an adviser to MUBC and helped students learn more about the potential of blockchain technology. For example, after conducting noncredit workshop sessions on state-of-the-art blockchain development tools, I worked as a coach and took a group of four Miami University undergraduate students to compete in the first Blockland Hackathon in Cleveland.[2] The result was an outstanding overall 3rd place, but 1st among college students. In addition, it is tremendously gratifying to see that two blockchain startups (CleverApply and blOX Consulting) were born at Miami University out of that hackathon group. To further educate my students on blockchain technology, I was able to secure funds internally and, in 2019, I helped organize the first MUBC annual conference.[3] The resulting event had high-profile speakers from organizations such as P&G and Deloitte talking to students for a whole day for no cost. In 2019, I also helped organize another successful educational event at Miami University, namely the Blockathon, the first Miami University blockchain hackathon.[4] We again managed to bring top-notch industry professionals to campus to serve as judges and mentors.

As Miami University and the Information Systems & Analytics department strengthen their cybersecurity initiatives, I have been working behind the scenes to establish key connections with industry leaders to help our programs succeed. For example, together with another faculty member, we took four students to IBM Cybersecurity headquarters in Cambridge, MA, in the fall of 2019. While we, the faculty members, developed strong ties with an industry leader, the students learned more about cybersecurity and experienced an ultra-realistic simulation of a data breach.[5] Those students were so amazed by the experience that they decided to create the Miami University CyberSecurity Club to promote cybersecurity education on campus further.

[2]Article on hackathon: https://miamioh.edu/fsb/fsbnews/?up=/news/181113132819+Blockland+Hackathon+2018+FSB+win.

[3]Article about the conference: https://miamioh.edu/fsb/news/2019/02/blockchain-conference-2019.html.

[4]Article about the hackathon: https://miamioh.edu/fsb/news/2019/11/2019-blockathon-business-case-competition.html.

[5]Article about the trip to IBM: https://miamioh.edu/fsb/news/2019/10/fsb-students-take-aim-at-hackers-at-ibm-cyber-range.html.

Teaching Awards & Honors

Due to my strong commitment to teaching and my students, I have been very fortunate to be nominated for and receive the following teaching awards.

- Outstanding Professor Award (Nominee) 2021
  - Miami University's Associated Student Government
- Student Recognition of Teaching Excellence Award (Winner) 2020
  - The Office of the Provost, Miami University
- Richard K. Smucker Teaching Excellence Award (Winner) 2020
  - Farmer School of Business, Miami University
- Outstanding Professor Award (Nominee) 2019
  - Miami University Associated Student Government
- Richard K. Smucker Teaching Excellence Award (Nominee) 2019
  - Farmer School of Business
- President's Medal 2019
  - Miami University
- Faculty Commendation (×6) 2017 - 2021
  - Center for Teaching Excellence, Miami University
- Professor of the Year Award (Nominee) 2016
  - RSM Student Representation, Erasmus University
- Professor of the Year Award (Winner) 2015
  - RSM Student Representation, Erasmus University

References

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