

Teaching Portfolio

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Lecturer

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UNC CHARLOTTE

College of Computing and Informatics

Contents

Introduction	2
Teaching Philosophy	3
Experience.....	4
Lecturer	4
ITCS 4151: Intelligent Robotics	4
ITCS 4150: Mobile Robotics	4
ITCS 3153: Introduction to Artificial Intelligence.....	4
ITSC 1213: Introduction to Computer Science II.....	4
Instructor of Record as Ph.D. Student	4
Departmental Teaching Evaluations.....	5
Introduction to Artificial Intelligence Fall 2020	6
Intelligent Robotics, Spring 2017	10
Topics in Computer Science: Robot Navigation, Spring 2016.....	14
Selected Student Reviews.....	17

Introduction

Since 2018, I have been a Lecturer in the Computer Science department at the University of North Carolina at Charlotte (UNCC) designing and teaching classes in robotics, artificial intelligence, and computer science basics. I completed a PhD at UNCC in 2019 studying real-time robot motion planning. In addition to my experience as a Lecturer, I was awarded the Graduate Assistance in Areas of National Need (GAANN) fellowship during my PhD which gave me significant teaching experience before graduating. In this portfolio, one will find a brief statement on my teaching philosophy, an overview of my teaching experience, and evidence of effective teaching through departmental evaluations and selected student reviews.

Teaching Philosophy

More than anything, I love to learn new things. This love drives me to teaching. I want to immerse myself in an environment based around learning and do whatever I can to help create a love of learning for others. Pursuing a career in education seems the most promising path for me to help as many people as possible experience this happiness.

I do not approach teaching haphazardly. I strive to teach with purpose and finesse. To do so, I have adopted the four principles below to guide my teaching.

1) **Be Active**

The evidence supporting active teaching is too strong to ignore. Whether it is a discussion, hands-on examples, or some other kind of non-lecture activity, it is nearly always more effective to spend class time with an active learning technique than a traditional “information dump” lecture. There are, of course, some exceptions where synchronous lectures are still effective and should be used accordingly, but I believe that active teaching techniques should be an item in any instructor’s repertoire of techniques.

2) **Embrace Remote**

Remote learning was our only option in 2020, but the shift towards remote learning began long ago with the advent of online tutorials and MOOCs. Tools that enable remote and asynchronous interaction with material (e.g., CodeWorkout) will be critical going forward. Increasing the availability of content (e.g., providing video lectures) will also be critical going forward. Being mindful of the societal shift towards more remote and asynchronous learning will help foster student independence and help courses work for students that need more flexibility.

3) **Focus on Fundamentals**

In the time of countless online tutorials, college classes must carve out a purpose and identity that has value not provided elsewhere. I think this identity should be rooted in training students on the fundamentals of a field. An understanding of fundamentals allows one to understand the full picture of a problem, which enables one to transfer their understanding to similar problems and/or evaluate different approaches to solve a problem.

4) **Be Relevant**

Computer Science is a fast-moving field. The problems we can solve today are much harder than those of only 15 years ago, and the approaches we use today are much different as well. It is a teacher’s duty to stay up to date on the field and make sure that their class is covering relevant material for students.

I want people to be better than I am. I’m not content with just having a new generation being *just as good* as its predecessor. I think each new generation should be *better*: more knowledgeable, more efficient, more open-minded, and more creative. Teaching is the best avenue to reach out to the next generation of computer science students and help them to become the best that they can be.

Experience

Lecturer

ITCS 4151: Intelligent Robotics

This course focuses on robotic manipulators. It covers the basics of motion planning with high degrees of freedom rigid bodies. The topics include forward and inverse kinematics, trajectory generation, configuration space, sampling-based path planning, and collision detection.

The course utilizes Python, ROS, and Ubuntu Linux. I provide a VM with everything pre-installed for students, and instructions on how to install everything for students that wish to use Linux natively. A simulated manipulator is used for most of the assignments to visualize the concepts such as inverse kinematics and trajectory generation.

ITCS 4150: Mobile Robotics

This course focuses on wheeled robots. It covers Robot Operating System (ROS) programming, wheel encoders, motion models, observation models, depth data features, localization, and mapping.

This course utilizes real mobile robots – both Turtlebot 2 and Turtlebot 3 platforms. Students are separated into groups of 4-5 people in class and each group gets a robot to use. As they work on the assignments, they run their code on the robot. Using real robots requires the use of ROS, Linux, and various custom Bash scripts to handle networking between student's PCs and the robots.

All assignments in this class are written in Python.

ITCS 3153: Introduction to Artificial Intelligence

This course covers the foundations of AI. The course starts with state space problem formulation, uninformed search, informed search, local search, quantifying uncertainty, Bayesian networks, probabilistic inference, inference over time, decision making, and Markov Decision Processes.

This course uses Python so that students leave the class with Python experience. We spend a couple weeks at the beginning of class learning Python because many students are 1st-semester juniors and only have experience with Java.

ITSC 1213: Introduction to Computer Science II

This course covers the object-oriented nature of the Java programming language, some basic programming skills, and an introduction to algorithms and data structures. The topics include an introduction to Object Oriented Programming, encapsulation, inheritance and polymorphism, interfaces, documentation, asymptotic notation, and linked lists.

Instructor of Record as Ph.D. Student

As a Ph.D. student, I was instructor of record for three courses: Intelligent Robotics (Spring 2017), Topics in Computer Science: Robot Navigation (Spring 2016), and Operating Systems and Networking (Fall 2013). I was a TA for many semesters for both undergrad and graduate courses in algorithms, AI, and robotics.

Departmental Teaching Evaluations

The Computer Science department at UNC-Charlotte observes each class during each Spring semester to evaluate the effectiveness of teaching. Two experienced faculty sit in on a class, fill out an evaluation form based on their perception of the class and student feedback. The instructor is asked to leave the room while student feedback is collected. A Performance Appraisal Form is submitted to the department chair and the instructor meets with the observers to go over the form. Two of my courses have been observed and the Performance Appraisal Forms are included in the following pages.

Introduction to Artificial Intelligence Fall 2020

Peer Observation – Online Teaching: Asynchronous

Faculty Member Sterling McLeod ITCS 3153 - 2020Fall_ # of students : 72 30.November.2020

Observer 1 Qiong Cheng
Observer 2 Angelina Tzacheva

Background: This peer observation instrument for asynchronous online instruction is based on existing evaluation rubric from UNCC CoED which is informed by recent national developments in scholarship and practice for online teaching and learning (see, <https://www.qualitymatters.org/rubric>). To that end, the instrument emphasizes principles of course/module design alignment as well as instructor presence and learner interaction. As much of the work of teaching an online course happens in advance of the course itself, the instrument emphasizes both the purposeful planning of online space and its structure and delivery.

At the peer observation pre-conference, the faculty should share the syllabus and access to the canvas course and identify one sample module that they wish to be reviewed along with the introduction module. The observation team along with the faculty member will determine an appropriate window of time to access the course/course module. The faculty is given the opportunity to provide a reflection and self-assessment based on this instrument.

Instructions: As you examine the asynchronous online lesson/module, determine which indicator best describes the feature on the instrument. Enter one of the following indicators in each blank of the instrument:

√ is included in the lesson/module

* a skill in development

Not observable

For overall evaluations and for applicable categories please provide scores of 1(opportunities for significant improvements), 2(opportunities for improvements), 3(good, meets expectations), 4(very good), 5(excellent) for each category and the overall would be the average of all categories.

1. Course Overview & Organization

√	Course description is provided.
√	Course orientation with instruction on how to get started and where to find various course components is provided.
√	Instructor information is available to students with contact and office hours.
#	Learners are provided an opportunity to introduce themselves to the class. (Optional)
√	Course information is sequenced and grouped into modules, units or topics to help students learn the content.
#	Calendar of due dates and other activities is provided.

√	Course materials and requirements if there is any.
#	Course is used for College Assessment and the components are present.

Comments:

- Although the calendar of due dates and other activities is not provided, the course structure on canvas is organized well by weeks, all assignment deadlines are clear and follow a certain pattern, and Dr. Sterling McLeod has introduced his course structure very clear in his [video](#)

2. Course Goals and Module Objectives (QM Model: Evaluate as appropriate)

*	Course goals are present and explicitly stated to the learner in measurable terms.
*	Module/lesson objectives are clearly presented to the learner.
*	Module/lesson objectives are aligned with the course goals.
*	The purpose of the module is described to the learner.

Comments:

_____ Please state the Course Goals in the Syllabus _____

3. Instructional Materials

√	A purposeful variety of instructional materials aligned with course and module objectives (e.g. textbook readings, video recorded lectures, web resources) are available throughout the lesson/module.
√	The instructional materials are current, relevant, and/or seminal.
√	Instructional materials used fosters critical and creative thinking and/or considers multiple perspectives. (if not applicable, put N/A)

Comments:

- The modules on canvas for week 9 through 11 demonstrate a consistent structure, where each week students read chapter(s), watch video(s), and work on application-based questions.

4. Learner Interaction

√	Learning activities provide opportunities for interaction that support active learning aligned with course/module objectives. (Active learning in asynchronous class is encouraged, however, not necessary. Evaluate only if such components exist).
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√	Learning activities provide opportunities for interaction that support critical and creative thinking and/or consideration of multiple perspectives. (Evaluate if applicable).
√	Learning activities and other opportunities are developed to foster student-student engagement. (Evaluate if applicable).
√	The instructor's plan for online course response time and feedback on assignments is clearly stated.

Comments:

- Dr. Sterling McLeod provides several synchronous sessions to meet students. In [a synchronous session](#) (pollev_inf.mp4), Dr. Sterling McLeod uses the PollEverywhere tool.
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5. Learner Assessment

*	Assessments and evaluations use multiple methods, such as quizzes, tests, discussion, essay, projects, and surveys. The assessments measure the stated learning objectives.
√	Assessments and evaluations are conducted on an ongoing basis throughout the course.
√	The course grading policy, policies for participation, late submission of assignments and extra credit is stated clearly.
√	Explicit rubric, rationale, and/or characteristics are provided for graded assignments.

Comments:

- Dr. Sterling McLeod provided explanation to assignments if necessary. For example, in "[Application: Exact inference with bayes nets](#)", the expectation to students has been stated clearly
-

6. Learner Support

√	Institutional/program information and/or policies and procedures are provided (e.g. Academic integrity, conceptual framework, online netiquette).
√	Technical support resources are provided.
√	Course navigation facilitates ease of use.

√	Statement or link to Americans with Disabilities Act (ADA) Compliance and procedure for requesting special services is provided.
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Comments:

- Syllabus in the course is clear.


7. Asynchronous Course Facilitation


√	Instructor and/or teaching assistant(s) periodically communicate with students to provide guidance and direction.
#	Instructor and/or teaching assistant(s) monitor students' progress and promptly grade the assignments/activities along with necessary feedback with follow ups as needed.

Comments:

- Dr. Sterling McLeod provides explanation or feedback about assignments for guidance (for example, [3153_exam1_solution.mp4](#)). As with an observer role, it is hard to judge whether or how an instructor monitors students' progress and promptly grade the assignments/activities along with necessary feedback with follow ups as needed.

Signatures:

Observer 1 Qiong Cheng  Date: 30.November.2020

Observer 2 Angelina Tzacheva  Date: 30.November.2020

Faculty Member Sterling McLeod ITCS 3153 - 2020Fall number of students : 72

Overall observation:

For overall evaluations and for applicable categories please provide scores of 1(opportunities for significant improvements), 2(opportunities for improvements), 3(good, meets expectations), 4(very good), 5(excellent) for each category and the overall would be the average of all categories.

What is the overall Observation? 5(excellent)

Overall Additional Comments:

Course well organized . Appropriate Learning materials provided including PowerPoints , Video Lectures, Exercises . Canvas discussions well handled by Instructor . Suggestions for improvement: Specify the Course Goals in the Syllabus .

Instructional Performance Appraisal Form

Evaluator Nadia Najjar and Taghi Mustafavi Instructor Sterling McLeod

Date 3/3/2017 Time 2:00pm Class ITCS 4151 No. Students Present 21

INSTRUCTIONS

- The evaluator is to assess the instructor's performance with respect to the major functions of teaching listed below
- The evaluator must add pertinent comments at the end of each major function for which an assessment of "Sometimes" or "Rarely" is given.
- The instructor is provided an opportunity to react to the evaluator's ratings and comments.
- The evaluator and the instructor must discuss the results of the appraisal and any recommended actions pertinent to it.
- The instructor and the evaluator must sign the form in the assigned spaces.
- The form must be filed in the instructor's personnel folder.

Check the appropriate boxes in categories 1 – 5 on this form.

1. Classroom Management

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor makes good use of available time for teaching and keeps students on task.					X	
2. Instructor stops inappropriate behavior promptly and consistently, yet maintains the dignity of the student.				X		
3. Instructor's expectations are clearly explained when giving assignments and other directives.	X					

No comment

2. Instructional Monitoring

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor poses questions clearly.	X					
2. Instructor uses student responses to adjust teaching as necessary.				X		

Comments:

Such situation did not appear in this session. However, students' comments indicated that the instructor does adjust to students' feedback and questions as part of teaching.

3. Instructional Presentation

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor links instructional activities to prior learning.	X					
2. Students appear to comprehend what instructor is saying.	X					
3. Instructor provides relevant examples and demonstrations to illustrate concepts.		X				
4. Instructor asks appropriate levels of questions that students handle with a high rate of success.		X				
5. Instructor conducts the lesson or instructional activity at an appropriate pace, slowing presentations when necessary for student understanding but avoiding unnecessary slowdowns.	X					
6. Instructor summarizes key points.	X					
7. Instructor presents content in a logical manner using smooth transitions from one topic to another.	X					
8. Instructor encourages creativity and critical thinking in problem-solving.				X		

Comments: Related to point 1, this was his first actual lecture, as he indicated at the beginning of class. He runs the course in a flipped classroom approach. At this point he saw a need to cover some important concepts that he felt the students we still not clear on. Previously, he did not conduct any lecture but indicated that her will spend 20-30 minutes of class time on lecturing.

4. Instructional Feedback

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor provides sustaining feedback after an incorrect response by probing, rephrasing the question, giving a clue, or allowing more time.				X		
2. Instructor treats all students in a fair and equitable manner.	X					

Related to point 1, such situation did not occur

Related to point 2, was true in that specific lecture

5. **Post-Observation Interview with Students**

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor has established a set of procedures that govern the handling of routine administrative matters.					X	
2. Instructor returns graded material in a timely manner.	17	1	3			
3. Instructor regularly provides useful feedback on out-of-class work.	17	4				
4. Instructor understands overall concepts.	21					
5. Instructor creates learning activities that make subject matter understandable.	15	6				
6. Class assignments are reasonable and encourage learning.	17	4				
7. Out-of-class assignments are clearly set forth.	15	6				
8. Students know what is expected of them.	12	9				
9. The instructor uses strategies that encourage critical thinking and problem solving.	17	4				
10. Instructor uses in-class activities during the semester.	20	1				
11. Test questions are appropriate for the material covered in class.	18	3				
12. Instructor is readily available to students outside of class.	19	2				
14. The class environment encourages students to ask questions.	20	1				

Overall Performance (check one):

Superior Above Average Average Below Average Unsatisfactory

Evaluator's Summary Comments:

From observing this session and hearing the students' comments, it is apparent that Mr. McLeod is a very knowledgeable and effective instructor. The students were pleased and with the way the course is handled and enjoying the flipped approach to this class. The also indicated their appreciation of the prompt feedback they received on assignments and that was very helpful to them. The overall tone was that the instructor was very knowledgeable, very nice and actively seeking the students feedback to improve the course and actually applying it.

Instructor's Reactions to Evaluation:

The lectures are motivated by the students not answering comprehension-level questions well on the first

+ e.g. when asked to compare 2 algorithms, they were not mentioning complexity. The lectures are a way to highlight concepts and guide their reading so that they take away the most important parts. The students do not enjoy the lectures as much as the assignments (based on 3 lectures since the observation), but I feel the lectures are very beneficial.



Evaluator's Signature

3/22/2017

Date



Instructor's Signature

03/22/2017

Date

Instructor's signature indicates only that the written evaluation has been discussed.

Another issue students have brought up is that the class requires a lot of background knowledge. I believe this stems from not requiring more math in the C.S. undergraduate programs. I am unable to teach many topics in this course without using concepts from multivariable calculus and Bayesian statistics. Since the students may not know these subjects, I have to spend 1-2 weeks at the start of the semester teaching a handful of concepts from these classes. This course (and other courses in the curriculum) would greatly benefit from adding multivariable calculus (MATH 2241) as a required course to the C.S. undergraduate programs. Additionally, adding the required statistics class, STAT 2122, as a prerequisite to this robotics course is definitely needed if the course concepts remain the same.

Instructional Performance Appraisal Form

Evaluators Drs. Ken Chen and Aidong Lu Instructor Sterling McLeod

Date April 1, 2016 Time 9:30am Class ITCS3050-2 No. Students Present 11

INSTRUCTIONS

- The evaluator is to assess the instructor's performance with respect to the major functions of teaching listed below
- The evaluator must add pertinent comments at the end of each major function for which an assessment of "Sometimes" or "Rarely" is given.
- The instructor is provided an opportunity to react to the evaluator's ratings and comments.
- The evaluator and the instructor must discuss the results of the appraisal and any recommended actions pertinent to it.
- The instructor and the evaluator must sign the form in the assigned spaces.
- The form must be filed in the instructor's personnel folder.

Check the appropriate boxes in categories 1 – 5 on this form.

1. Classroom Management

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor makes good use of available time for teaching and keeps students on task.					x	
2. Instructor stops inappropriate behavior promptly and consistently, yet maintains the dignity of the student.				x		
3. Instructor's expectations are clearly explained when giving assignments and other directives.	x					

Comments:

The instructor started with explaining homework and continued to the lecture on differential drive.

Students have confirmed that the instructor's expectations are clearly explained for homework, projects, and exams.

2. Instructional Monitoring

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor poses questions clearly.	X					
2. Instructor uses student responses to adjust teaching as necessary.		X				

Comments:

The instructor posed several questions clearly during the lecture.

3. Instructional Presentation

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor links instructional activities to prior learning.		x				
2. Students appear to comprehend what instructor is saying.		x				
3. Instructor provides relevant examples and demonstrations to illustrate concepts.	x					
4. Instructor asks appropriate levels of questions that students handle with a high rate of success.	x					
5. Instructor conducts the lesson or instructional activity at an appropriate pace, slowing presentations when necessary for student understanding but avoiding unnecessary slowdowns.	x					
6. Instructor summarizes key points.	x					
7. Instructor presents content in a logical manner using smooth transitions from one topic to another.		x				
8. Instructor encourages creativity and critical thinking in problem-solving.		x				

Comments:

The lecture is extensive on math. The instructor has done a good job on explaining the math and providing examples. The setting of mixed lectures and in-class projects seems to be very suitable for this class and attracts the interests of students.

4. Instructional Feedback

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor provides sustaining feedback after an incorrect response by probing, rephrasing the question, giving a clue, or allowing more time.	x					
2. Instructor treats all students in a fair and equitable manner.	x					

Comments:

3. **Post-Observation Interview with Students**

	Often	Some.	Rarely	N/A	Yes	No
1. Instructor has established a set of procedures that govern the handling of routine administrative matters.					x	
2. Instructor returns graded material in a timely manner.	X					
3. Instructor regularly provides useful feedback on out-of-class work.				X		
4. Instructor understands overall concepts.	X					
5. Instructor creates learning activities that make subject matter understandable.	X					
6. Class assignments are reasonable and encourage learning.		X				
7. Out-of-class assignments are clearly set forth.	X					
8. Students know what is expected of them.	X					
9. The instructor uses strategies that encourage critical thinking and problem solving.		X				
10. Instructor uses in-class activities during the semester.	X					
11. Test questions are appropriate for the material covered in class.	X					
12. Instructor is readily available to students outside of class.	X					
14. The class environment encourages students to ask questions.	X					

Overall Performance (check one):

Superior Above Average Average Below Average Unsatisfactory

Evaluator's Summary Comments:

This is an attractive class with in-class project settings. The instructor is able to explain extensive math and lead students through hands-on programming projects. The class is generally well handled with positive students' feedbacks. We suggest the instructor to consider more vivid examples such as videos in the lectures.

Instructor's Reactions to Evaluation:


Evaluator's Signature

4/13/2016
Apr. 13, 2016
Date


Instructor's Signature

04/13/2016
Date

Instructor's signature indicates only that the written evaluation has been discussed.

Selected Student Reviews

UNC-Charlotte collects student evaluations via CampusLabs. This is an online service that students *may* log in to complete the evaluations. As such, not all students will submit reviews of their courses. Below are a handful of reviews I've received that I am proud of.

- “Sterling is an excellent teacher and a gem among the CCI staff. He really understands the concepts that he is teaching you, but he shows it off in a way that makes you feel like he is just another person who had to sit down and learn a new concept so that he could teach it to us. He is a very relatable teacher. Of all my classes, he handled the movement to online meetings the best. There was not a jarring change, and he kept up the quality of his teaching throughout the entire semester. Give this guy a raise.”
- “He handled the transition to online due to covid very well. Using discord was a great choice, and I hope more teachers use it even when in person teaching resumes because it provides a great way for students and teachers to communicate outside of class”
- “This instructor was the best instructor I have ever had for Covid classes. He made every part of his class organized and easily accessible. Many of my professors did not give half the effort this instructor did and I really appreciate him for it. Videos every week describing the content, work that not only made you think about the content but let you learn the content itself, posted assignments and graded them accordingly, as well as having a lot of support during office hours to really help when you needed it. This guy is the best.
- “Helpful, knowledgeable, very interested in our ability to learn course info, transparent in his ways, always ready to improve, also actively works on class material”
- “Sterling McLeod is a very good instructor, especially for this course. He is definitely very passionate about Artificial Intelligence. It is obvious he wants his students not just to succeed in his class, but to actually learn as much as possible in a semester about the world of AI. From what I can tell his sections are more difficult than other sections of 3153, but the expectations to succeed in this class are reasonable. He actually cares that his students learn the material, which is a lot more than I can say about most of my past professors. His video lectures provided a lot guidance on the assignments that made them easier. The prep work quizzes were directly beneficial to what we would be doing in class that day. The Poll Everywhere quizzes were also very helpful in retaining and understanding the information not just for the tests, but for your own knowledge. Even though I do not have an A in the course, I am glad I took his section vs. the other options because he actually cares. He promotes a great environment for learning. He used the beginning of the semester to ensure his students have a firm foundation of knowledge in python before moving to the more difficult AI material. He was absolutely the best instructor for this class. Even though this is the only course I have taken with him, he is by far the best instructor I have had at UNC Charlotte.”