

Computer Science Masters degree

Portfolio option

The portfolio option is intended to showcase the graduate level work you completed while pursuing your MS degree in computer science. It assumes satisfactory completion of at least 36 credits of UG or G-designated Computer Science courses, of which at least 18 credits must be at the five hundred level. While you may start work on your portfolio as soon as you have completed some of your graduate level coursework, remember that it is intended to display work you have completed across *all* of your graduate classes (or at least most of them). The completion, presentation and evaluation of your portfolio should occur in your last semester. All portfolios must be electronically displayed via the Web. This document outlines the prerequisites for completing your portfolio, the components of a portfolio, and how your portfolio should be presented.

Prerequisites for completing a portfolio

The portfolio option requires that you work with a main advisor, also called your Committee Chair, from within the CS department. Your choice of advisor is an important one and should be decided carefully. Identifying a faculty advisor for your portfolio will usually happen at the end of your second semester. You should arrange a meeting with the faculty member you believe is best suited to support your work and come prepared to discuss your ideas for your portfolio. Faculty members may also contribute additional suggestions for you to consider. After this initial meeting, the faculty member may either agree to work with you or recommend that you visit with other department members that might be more suitable.

After you have solidified your choice of main advisor, sometime around your third semester you will need to assemble the rest of your committee. In addition to your committee Chair, you must also find a secondary faculty member from within the CS department, and a 3rd faculty member from outside the department. All committee members must be tenure-track faculty members. Your advisor may make suggestions for people to ask, but it is your responsibility to meet with these faculty members and ask them to be on your committee. All committee members **must** be selected at least **10 weeks** before your scheduled presentation/defense. When you meet with your committee members for the first time, be prepared to explain your work and plans for the portfolio. If they agree to serve on your committee, you should give them regular updates of your progress.

Your main advisor is the primary contact for the work you are completing, and as such you should meet with him/her frequently to make sure you are progressing as planned. It is a good idea to schedule regular meetings with your advisor to ensure that you are on track. If there are any significant changes to your work from what was originally agreed upon, they must be approved by your advisor. If you fail to complete your portfolio in a timely fashion, you must have it approved again. At this time,

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2. Capturing the Wisdom of Practice by Giselle O. Martin-Kniep, published by ASCD (1999).

your advisor may choose to discontinue his/her role as your committee Chair and recommend a new faculty member for you to work with.

Components of a portfolio

You should be aware that every member of the Computer Science faculty will have access to the entire contents of your portfolio. It is your choice how you choose to create your Web-based portfolio, but it must include the following:

1. **Evidence of graduate level scholarship.** A key component of the portfolio is how it demonstrates your ability to conduct graduate-level research. The faculty will be looking for evidence of specific research skills such as the ability to identify a problem, to work both independently and in a group, to carry out critical analysis of your and others' work, and to communicate effectively.

Your portfolio should provide this evidence of research ability by showcasing at least 5 projects completed as part of your graduate studies in the CS department. Only two of these projects can be groupwork, the rest must depict work you have completed individually. Each project must be fully described and displayed. Use the following questions as a starting framework for describing each project:

- What was the project assignment?
 - i. If possible include original project instructions/description provided by the instructor
- What did you learn from the project?
- What are you most proud of?
- If groupwork, what was your role in completing the project?
- What would you do differently next time?

Include visual representations, source code, running programs, and any other relevant materials to supplement each project description. Projects with a strong “visual component” tend to present well, and so should be strongly considered for inclusion in the portfolio.

2. **Breadth and depth.** The projects you choose to display in your portfolio and how you describe them should clearly indicate both the breadth and depth of your knowledge in a variety of CS topic areas. To do this, you must choose your projects carefully and describe them thoroughly. Some questions you may ask yourself to help guide you with this process include:
 - Which pieces of my work best demonstrate my achievement in a particular domain?
 - How can I best illustrate the depth of my knowledge?
 - How can I choose a wide variety of different projects to show the breadth of my knowledge?
3. **Self-reflection.** Include a reflective essay (1 page minimum) that looks back on your graduate learning process. Talk about how your interest in computing has evolved, the variety of work you

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completed, the skills you acquired, what you are most proud of, what you would like to learn more about, what you plan to do when you graduate, etc.

4. **Curriculum Vitae (CV).** In addition to the minimal requirements listed above, you should also include a current CV in your portfolio. This CV can be a linked-to Word document, and should include items such as:
 - Relevant, non-CS related work from your graduate time at the UM. For example, this might include projects you completed during internships or other professional work.
 - Honors and awards. Include student fellowships, induction into honor societies, etc.
 - Publications. These might include conference proceedings, abstracts, posters, etc. Be sure to note when such publications have been peer-reviewed.
 - Presentations. These might include seminars, professional presentations, tutorials, lab meetings, workshop presentations, paper presentations in classes, paper presentations at conferences, etc.
 - Proposals (in preparation, submitted, under review, and accepted). Include fellowship applications, grant applications (or sections thereof), applications to industrial affiliates, requests for travel money from conference organizers, etc. Note the status of the proposal (in preparation, under review, accepted, rejected, under revision, etc.)
 - Teaching. Were you an instructor, a TA, a tutor, a grader, or a lab monitor while in graduate school? List your responsibilities, including giving lectures, and writing and grading exams and homework, if applicable. Did you hold office hours? How many students were in your section? Note whether you worked in Computer Science courses or other courses.
 - Research. Were you a RA while in graduate school? List your responsibilities, including giving talks, presenting your work to outside groups, managing lab work, etc. Discuss how you contributed to ongoing research either independently or as part of a research lab.
 - University and department service (not research or teaching). Include standing and ad hoc department committees, grad student representative, coffee czar, etc.
 - Include participation in the activities of professional societies, volunteer activities at local schools, etc. Include participation in the activities of professional societies, volunteer activities at local schools, etc.
5. **Sophisticated design and display.** You are encouraged to be creative in how you construct and display your electronic portfolios; after all, this site will represent personal accomplishments and reflection. However, your portfolio must be accessible via the Web, and it should be sophisticated, aesthetically pleasing, and professional in tone. Keep in mind that you may decide to show your portfolio to prospective employers. All materials included in your portfolio should be related to accomplishments and work you have completed during your time as a graduate student.
6. **Organization.** Lastly, your portfolio must be clearly organized and easy to navigate. All components should be quickly evident, and you must work hard to develop the best way to structure and sequence your work. Some questions you should consider as you organize your portfolios include:
 - a. How can I best tell the story of my graduate time in the CS department?
 - b. How can I make the connections between the pieces in the portfolio clear to my reader?
 - c. What organization will enhance the main themes of my work?

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Implementing your portfolio

While you may choose to develop your portfolio using a programming language and environment best suited to your background and skills, all portfolios must eventually be stored on a departmental web server. This assumes that your portfolio will be public for the world to see, and it can be used by the department for such purposes as recruitment, examples for other students to look at, showcasing on the department's web site, accreditation, etc. If you do not wish for your portfolio to be made public, **it is your responsibility** to work with your advisor and the department system administrator to change the privacy settings. The default option, if you do nothing, is that your portfolio will be made public.

Presenting your portfolio

Once you have completed your electronic portfolios to your advisor's approval, you should schedule your oral presentation. All committee members must be present for this presentation, which will also be advertised by the department and open to the public. During your presentation, you should take between 30-40 minutes to show your work to the assembled audience, after which you will field questions from the public audience. Once this initial questioning is complete, the public may be asked to leave the room and questioning may continue from members of your committee. The entire presentation should take about an hour. Once your presentation is complete, you will be asked to leave the room and the committee will discuss how well you met each of the criteria outlined in the previous section.

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