



## Purpose

The vision of the CCS Fellows Program is to inspire a new generation of leaders in computational science to cross the traditional boundaries between disciplines, by equipping them with new cross-disciplinary skills and experience. The Program does this by offering mentorship outside the students' area of expertise.

## Eligibility

This is a prestigious designation awarded to selected students. It is offered to two undergraduate students and two graduate students per year. Students from any of UM's Schools and Colleges may apply.

## Program Overview

CCS Fellows develop their computational skills and expand their research experience under the guidance of *two* mentors. Both mentors are faculty members: The first is the student's research advisor, and the second is identified by the CCS Fellows program and provides the computational research expertise.

All Fellows have the opportunity to use CCS's Advanced Computing facilities for their research, and to work closely with CCS faculty and staff. No stipend is offered, but there is a cash prize at the end. For the 2017-2018 cycle, the application and selection process will take place in the Fall semester.

Competitive applicants have some experience in a computational setting, and are able to outline a cross-disciplinary project that they would like to pursue.

The project details do not need to be clearly defined at the time of application, however, the disciplines that would come together in the project should be clearly stated.

## Term Definitions

- **Student Finalists:** Students selected to proceed to phase I of the Program, where the student meets with their faculty research advisor and potential CCS mentor to discuss the needs of the project, and to lay out a plan of action.
- **CCS Fellows:** Students selected to proceed to phase II of the Program, where the project starts in full speed.
- **Research Advisor:** A faculty member, often from the student's home department, who operates as the domain expert. For undergraduates, this is often a faculty member with whom the student has worked with in the past. For graduate students, this is the dissertation research mentor. (aka Academic Mentor)

- **CCS Mentor:** A CCS-affiliated faculty member or CCS staff member who operates as the computational expert. CCS Mentors are more than a source of technical advice, they are themselves researchers who are there to dive deeper into the project, and to provide appropriate direction.

## Program Structure

### 1. Selection of Finalists

Selection of the CCS Fellows happens in two phases. In phase one, student finalists, along with their faculty research advisor, meet with the potential CCS Mentor to discuss the needs of the project, and to lay out a plan of action.

### 2. Selection of CCS Fellows

After this meeting takes place, and if a good match has been identified in terms of the potential CCS Mentor's expertise, the student automatically passes on to phase II, where the project starts in full force.

### 3. Launch Event

CCS will host a mid-semester launch event to introduce the Fellows to CCS and CCS to the Fellows, and to share some background and the plan of action that has been decided for the project. Fellows will be expected to present a 3-minute outline of their prospective project at this event.

### 4. Checkpoints and Fellow Gatherings

CCS will be reaching out every 4-6 weeks to make sure everything is on track. CCS will also invite all of the current year's Fellows to informal Fellows Program gatherings at least twice during the Program year. One of the benefits of the Pprogram is that the Fellows will expand their network beyond their disciplinary connections; these program gatherings are intended to facilitate that.

### 5. Workshops and Other Training Opportunities

While making progress on their projects, Fellows will be invited to attend any CCS-hosted workshops, Lunch & Learn Seminars, invited-speaker seminars, symposia, and conferences as they arise. Attendance is not compulsory, but it is encouraged, particularly in the cases where there is a direct benefit to the project.

### 6. CCS Fellows Symposium (Closing Event)

Fellows will be expected to present their work at the "CCS Fellows Symposium" in April. Fellows will be asked to prepare a 10-minute presentation (with a maximum of 10 slides) for this closing event. Further details will be provided at least two weeks before the symposium. A networking reception will follow, with invited guests from across the University and beyond. Certificates of completion and cash prizes will be awarded.

## 7. Continued Engagement

The CCS Fellows are part of the CCS family even after the Program conclusion. Although no official mechanism is in place, it is our sincere hope to maintain contact with and support our CCS Fellows, particularly as they enter the next phase of their careers.

## Program Guidelines and Roles

### CCS Fellow Guidelines

Fellows are expected to: Conduct a research project for the duration of the Program, enroll in appropriate courses, coordinate with their mentors, and approach CCS faculty and staff for access to software or HPC facilities as needed.

During phase I when the student is a finalist, all three parties should be present (the Student Finalist, the Research Advisor, and the CCS Mentor). The goal of the first meeting should be:

- To refine the definition of the project
- To lay out a plan of what there is to do
- To explicitly outline the specific contributions of each party to the project.

If any missing pieces are identified (skills, resources, etc.), a plan should be made for how to fill them in. CCS is here to provide any computational resources that the project needs.

Undergraduate Fellows are encouraged to talk to their department about using their CCS Fellows project to enroll for research and writing credits within their departments, thus earning credits and possibly becoming eligible for *summa cum laude* honors, or, fulfilling research requirements of their major. Undergraduate Fellows conclude the Program at the end of that academic year's spring term.

Graduate Fellows are expected to work on a defined project that is within the scope of their graduate research thesis project. Their own research advisor or principal investigator is required to be one of the mentors, and they will be provided with a CCS Mentor according to their cross-disciplinary interests and/or research needs. CCS Graduate Fellows also conclude the Program at the end of the spring semester, but they will be given the opportunity to continue their work over the summer, if needed.

All Fellows are responsible for setting up regular, recurring meetings with both of their advisors. Furthermore, it is the student's responsibility to devote the time needed for the project to be successful. The workload should be equivalent to one 3-credit course, and an appropriate amount of time must be dedicated to the project every week.

Applicants are encouraged to suggest a CCS mentor—either from our website or by previously having met a CCS faculty member—but the final decision of CCS mentor assignment will rest with the Steering Committee.

Appointment of the Fellow is contingent upon the success of finding a CCS Mentor. The Committee has strategies in place to ensure that a CCS Mentor is successfully identified.

## Advisor Guidelines

The CCS Mentors will guide the Fellows through the design, management, analysis, interpretation, and communication of their research. It is the responsibility of the Fellow to use that guidance in pushing the project forward. The intention of the Program is to train the Fellow in *research*, and thus the program is designed to be soft-directed. The Fellow will develop the ability to: problem-solve, self-motivate, and develop their critical and creative thinking.

Either advisor (i.e. the Research Advisor or the CCS Mentor) has the freedom to limit the scope of the project as they see fit. It is extremely important that both advisors ensure that *all parties* are acknowledged and credited appropriately for their contribution, particularly in the case where they meet authorship criteria for publication.

In terms of tangential skill development for the CCS Fellow outside of the Program, the CCS Mentors will consult with the Research Advisors to direct the Fellows towards any training opportunities that might help them, and to involve them in lab meetings and other activities of their research groups. The Research Advisor is responsible for guiding the Fellow towards research or writing credit courses that might be applicable.

## The Steering Committee

The Steering Committee members are: **Gary Beecham** (School of Medicine), **Alberto Cairo** (School of Communication), **Mohamed Iskandarani** (RSMAS), **Athina Hadjixenofontos** (CCS), **Vance Lemmon** (School of Medicine), **Kamal Premaratne** (College of Engineering), **Mitsunori Ogihara** (College of Arts&Sciences), and **Juhong Park** (School of Architecture).

## Application Process, Materials, and Timeline

Applicants are required to submit a completed Application Form found on the CCS website [ccs.miami.edu](https://ccs.miami.edu) under Engagement > CCS Fellows, accompanied by a transcript, a CV, and, in the case of graduate students, a support letter from their academic mentor.

The Steering Committee will meet within one week of the closing of applications to choose the CCS Fellows.

The announcement will be emailed to offices of Undergraduate Research, Graduate Office (UM, Med Sch, RSMAS, CoE, CAS), and to student groups at CoE, CAS, Med School, and RSMAS. Media Relations will help publicize it internally (E-Veritas, etc.), and via student media.

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*Applications for 2017-2018 open on September 5, 2017. Deadline for applications will follow three weeks after that, on September 22, 2017. There will be two reminders before the deadline.*

## Selection Criteria

The selection criteria are:

- A. Student must have computational skills sufficient to get started on the proposed project.
- B. The proposed project integrates ideas from *more than two* disciplines, one of which must be new to the student.
- C. Graduate students should have a well-formulated, achievable research question that is in line with their academic mentor's letter of support.
- D. Graduate students need a support letter from their academic advisor or PI.
- E. Application must be complete, and must be well written, well organized, and thoroughly thought out.
- F. Previous research experience is not requisite, but is an advantage.
- G. Student must be in good standing with the University.

Please print or type:

**1. Your Name and Student Information**

First and Last Name \_\_\_\_\_

E-mail Address \_\_\_\_\_

Physical Address \_\_\_\_\_

\_\_\_\_\_

UM Student ID # \_\_\_\_\_

Major/Minor \_\_\_\_\_

Current GPA Score \_\_\_\_\_

**2. Your Departmental and Program Information**

Your Home Department and/or Graduate Program, if applicable \_\_\_\_\_

\_\_\_\_\_

Your Academic Advisor and/or Research Mentor \_\_\_\_\_

\_\_\_\_\_

Would you be interested in earning research and/or writing credits?  Yes  No

Are you already working with CCS?  Yes  No If Yes, with whom? \_\_\_\_\_

**3. Do you already have a Pegasus account?**  Yes, I am an active user  Yes, but I am not an active user  No

**4. How would you rate your computational skills?** (check one)

Never Programmed Before

Beginner (have done some programming)

Intermediate

Advanced, but never worked in a command-line environment

Advanced and have worked in a command-line environment

**5. List your computational skills, if any** (e.g. programming languages, tools, environment, and other statistical/mathematical skills)

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**6. List math/science/engineering courses in which you are currently enrolled** (title, code, department)

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**7. Statement of Interest**

Please provide 2-3 paragraphs, below, on your interests in the computational science arena. If you already have a subject or specific cross-disciplinary project in mind, please tell us about it.

**8. Your Application Checklist**

- Completed Application Form
- Support Letter from your Academic Advisor and/or Research Mentor recommending you for this program, and telling us about cross-disciplinary fields that would enhance their research
- A Copy of your Transcript
- Your CV

Please submit your application via email to: [ccsadministration@miami.edu](mailto:ccsadministration@miami.edu).

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*Upon review of your application, you will receive a letter of notification. Thank you for your interest.*