A Quantitative, Objective Process for ICS Faculty Assessment Part One: State Representation

Improve The ICS Faculty Experience
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1 Objective

The external evaluators have concluded that the ICS Department as a whole is "underperforming". We believe that part of the reason for this conclusion is a lack of clarity into what it means for an individual faculty member, as well as for the ICS faculty as a whole, to be "performant".

The University of Hawai'i has a variety of policies that emphasize the need for and benefits of periodic faculty assessment, with associated mechanisms for improvement. Junior faculty are required to have yearly assessments, which should result in helpful feedback that improves the probability that the junior faculty member will receive tenure. For tenured faculty, assessments occur every five years, with the result that if

a faculty member is not performing adequately an improvement plan will be put in place and monitored by the Dean. However, due to no clear and objective definition of what it means to perform adequately, these mechanisms are often not invoked. Thus, the benefits of periodic faculty assessment, both to individual faculty members and to the ICS Department as a whole, are not achievable.

The purpose of this document is to define a mechanism to measure and represent the state of the ICS faculty, both individually and collectively, through quantitative data. The purpose of this document is not to define a way to evaluate that state as performant or non-performant. This is because before designing data-driven performance criteria, we need to validate the appropriateness of the kind of data being collected for the purpose of evaluation.

We want to emphasize from the beginning that we do not want to implement a new, burdensome reporting task for individual faculty members. Instead, our goal is to design a system that actually reduces the administrative burden on individual faculty members by automating data collection and reporting, and by making the Department administration responsible for most of the data gathering. This has a positive side-effect of making data gathering more uniform and objective across faculty members.

More specifically, we hope this process will achieve the following goals:

1. To provide a means to collect data that provides insight into faculty teaching, research, and service on an annual basis, which can then be "rolled up" into multi-year reports for 5 year reviews and/or tenure portfolios.

2. To provide a basis for helpful feedback to individual faculty on how to improve their performance, if necessary.

3. To minimize administrative burden on individual faculty members and the department. Data will be collected automatically whenever possible. When manual entry by a faculty member is required, there should be clear benefits. For example, for senior faculty, annual data entry should mean a substantial reduction in the effort required to produce their five year annual review document. For junior faculty, annual data entry should reduce the effort required to produce their tenure portfolio.

4. To provide a way to create annual "State of the Department" reports that can be presented to the ICS faculty as well as to the UH administration. This report aggregates together the data from all faculty members over one or more years. Once the system has been in place for several years, the State of the Department report can also automatically include trends for the department.

5. To provide baseline values for aspects of teaching, research, and service that can serve as inputs to an evaluation algorithm that helps assess whether individual faculty members, as well as the ICS Department as a whole, is performant or non-performant.

To achieve these goals, we need to define metrics that are both easy to collect and provide useful insight into the faculty member performance with respect to teaching, research, and service. We do not seek to define an exhaustive set of metrics. Instead, we hope that the 80/20 rule will apply in this case: that a set of metrics that cover 80% of faculty assessment with 20% of the effort and complexity will suffice to achieve the goals.

We view the definition of assessment metrics as a long-term, ongoing project. As the system is put in place, we expect to discover useful new objective measures that can be integrated into the process with acceptable overhead. We might find that existing metrics need to be modified or discarded. Nothing being proposed here is intended to be "set in stone". But we believe that our relationship with the administration as well as with each other will be improved by a common understanding of our collective goals and the way in which those goals will be measured and assessed.

2 Assessment Metrics

2.1 Research Assessment Metrics

2.1.1 Funded Awards

Metric: Total award dollar amount, total amount brought to UH as F&A, total amount brought to ICS Dept as F&A, Role of Faculty member (PI, co-PI, Senior Personnel), dollar amount breakdown as equipment, student support, faculty support.
Acquisition Method: The department will obtain this data for each faculty member from the Office of Research Administration, which has a reporting portal.
Issues: We need a fair method to generate yearly data for multi-year awards.

2.1.2 Grant Proposals

Metric: Same data as for funded proposals.
Acquisition Method: The department will obtain this data for each faculty member via a report from ORS.

2.1.3 Student Support

Metric: Total dollar amount that the PI has actually spent in the past year to fund Research Assistants, Postdocs, and REU undergraduate students.
Acquisition Method: The department will generate this data for each faculty member based upon its internal accounting procedures.

2.1.4 Research Publications

Metric: List of **peer-reviewed** publications. Each publication is described by: title, author list, percent effort by the faculty member, number of pages, venue, acceptance rate and/or impact factor, and link to the online publication page (ACM DL, IEEE Xplore, PubMed, etc.).
Acquisition Method: Reported by faculty members.

2.1.5 Service to Research Community

Metric: A list of service functions (e.g., editor of a journal, chair of a conference program committee, membership in a conference program committee), with a link to the corresponding page for confirmation.
Acquisition Method: Reported by faculty members.

2.1.6 Other Research Contributions

Metric: A list of relevant contributions that are not covered by the above metrics, each of which is described textually.
Acquisition Method: Reported by faculty members.

2.2 Teaching Assessment Metrics

2.2.1 Course Evaluations

Metrics: CES (f.k.a. eCAFE) responses for a small set of questions regarding instructors. We will include both questions with quantitative responses (i.e. numerical, 1-5) as well as questions with qualitative responses (i.e. short textual answers). The qualitative responses are useful for explaining the quantitative values and for suggesting opportunities for improvement from the student perspective.
Acquisition Method: Pulled automatically from CES, selecting ∼5-7 questions defined by the department as those pertaining to the instructor. Candidate questions include:

- Overall, how would you rate this instructor?
- The instructor was well-organized and prepared for each session
- The instructor was effective in meeting the objectives of the course
- The instructor was available for consultation with students
- The instructor both sets high standards and helps students achieve them
- My overall evaluation of this instructor is...
- My overall evaluation of this course is...

Issues: Course evaluations and their relevance/accuracy are debatable, as we know, but they are unarguably useful in identifying outliers: faculty who score way above or way below the mean on the above questions. Possible easy, low-labor options to consider in addition are:

- Anonymous yearly surveys in which undergraduate students pick their "3 favorite" instructors
- A yearly teaching award given by the ACM chapter (suggested by external evaluators)

2.2.2 Course Enrollment

Metrics: Final enrollment number for all courses for which the faculty member is the instructor of record. This metric is gathered to help understand the contribution of the faculty member to the education of our student population. This metric was requested by the external evaluation committee and used in their assessment of our department and individual faculty members. The metric is useful because the "teaching load" of a faculty member requires more information than just the number of courses taught; a course with an enrollment of 5 will typically involve significantly less work than a course with an enrollment of 25.
Acquisition Method: Pulled automatically from Banner at the conclusion of the semester.

Issues: There is anecdotal evidence of faculty actively pursuing "low enrollment strategies".

2.2.3 Ph.D. and M.S. Student Committee Chairing and Membership

Metrics: A list of following duties (including student names, departments, and institutions):

- Number of M.S. committee membership for a final defense as chair
- Number of M.S. committee memberships for a final defense as committee member
- Number of Ph.D. committee membership for a proposal defense as chair
- Number of Ph.D. committee memberships for a proposal defense as committee member
- Number of Ph.D. committee membership for a final defense as chair
- Number of Ph.D. committee memberships for a final defense as committee member

Acquisition Method: Reported by faculty members.

2.2.4 Other Teaching Contributions

Metric: A list of relevant contributions that are not covered by the above metrics, each of which is described textually.
Acquisition Method: Reported by faculty members.

2.3 Service Assessment Metrics

Note that services to one's research community are under the Research Assessment Metrics.

2.3.1 University and College Service

Metric: Itemized university services that specify role (member, chair) and the committee (e.g., TPRC)
Acquisition Method: Reported by faculty members.

2.3.2 Local Community Service

Metric: Itemized community services that involve your professional skills as a computer scientist. Each item should specify the role (member, chair, advisor) and the nature of the service (board of directors, advisory committees, etc.)
Acquisition Method: Reported by faculty members.

2.3.3 Funded "Service" Awards

Metric: Number of funded award and total requested funds (ICS F&A) for Infrastructure grants, REU-site grants, etc. Essentially, all awards that do not directly pertain to research but support it.
Acquisition Method: The department will generate this information for each faculty member via reports from ORS.

2.3.4 Department Service

Historically service to the department has consisted in occupying one of the long-running chair positions (chair, associate chair, grad chair, etc.), in chairing temporary committees such as DPCs and hiring committees, and in participating in all the above. There has been no notion of assessing service quality. As a result, it is likely the department has not been served as well as it could have been by the faculty. Furthermore, it has created a strange imbalance with some faculty members doing heroic service for the department and others doing nothing.

The draft "plan for action" under which this faculty assessment proposal resides proposes a radical change, with the addition of a task-based approach. To clarify, while long-running chair positions are still necessary to deal with day-to-day business, vision/action *tasks* are offloaded to short- to medium-lived small groups of faculty. This suggests the following metrics in terms of participation:
Metric: List of service positions occupied during the past year. Categories include:

- Chair positions (e.g., graduate chair, curriculum chair, associate chair);
- Temporary committee chair positions (e.g., DPC chair, hiring committee chair);
- Temporary committee participations (e.g., DPC member, hiring committee member);
- Task owner positions.
- Task participation positions.

Acquisition Method: The Department will provide this data on faculty involvement in each of these service roles.
Issues: For now, data collection regarding Service is manual, self-reported, and effectively unverified. Once this data collection system is in place, we can begin to determine ways to "validate" service contributions. For example, if a faculty member claims to have participated on a task but never showed up to meetings or made any other significant contribution, then there should be a way for that claim to be not counted. Similarly, there should be minimum standards for obtaining credit for service as a Chair or Committee Chair. These standards and validation procedures are important, and will need to be defined clearly, but are for now outside the scope of this document.

2.3.5 Other Service Contributions

Metric: A list of relevant contributions that are not covered by the above metrics, each of which is described textually.
Acquisition Method: Reported by faculty members.

3 Data Collection Procedure

A process needs to be put in place for collecting data for the metrics in the previous section *on an annual basis*. Note that most of data can be collected and entered automatically by the ICS Department staff.

Relatively little data must be entered by individual faculty (which can be done throughout the year).

The department will develop a simple system (e.g., a Web app) for ensuring that data collection is as non-labor-intensive as possible. Furthermore, this system will automatically generate aggregate data for an annual "State of the Department" report. The details of the particular technology in use will be settled if the approach proposed in this document is approved by the department, and once the proposed metrics in the previous section are finalized.

4 From State to Assessment

Once the system is in place and data has been collected for the entire faculty for at least a year, we can begin the process of defining "performant". This will be an interesting and useful discussion for the ICS faculty, as we want to allow for variability in how faculty contribute to the Department. Some faculty may wish to focus more on research, some more on teaching, some more on service, and this focus could change over time. But, we need all of these contributions to aggregate together into a "performant" Department, where each faculty member shoulders their fair share of the responsibility.

This document is subtitled "Part One: State Representation". We hope that the results of the above discussion will lead to a second document subtitled "Part Two: Assessment". That document will detail how state data can be used to produce assessments.