

SUMMARY OF THE COMPUTER SCIENCE DEPARTMENT GRADUATE PROGRAM REVIEW

This document outlines the findings and recommendations of the review of the graduate program of the Computer Science (CS) Department at Sam Houston State University (SHSU), March 20-21, 2014. The reviewer (Dr. N. Park) was invited to review the CS department with focus on the Computing and Information Science (CIS) program. The reviewer had the opportunity to interact and interview college/university administrators, faculty, staff and graduate students. The findings and related recommendations are summarized below.

EDUCATIONAL ACTIVITIES

The CS department is engaged in undergraduate and graduate education (Master program, MS). The enrollment in all three programs (CIS, DF, IAS) has been steadily increased from 23 in 2005, to 45 in 2006, to 52 in 2008, to 63 in 2011, to 83 in 2013; and it reflects the national trend of up-trend in CS programs enrollment due to recent high-tech job market pickup. The Master program is somewhat under-populated (4 and 4 new enrollment in spring 2013 and fall 2012 and with some inconsistent new enrollments further in the past) for the size of the faculty group (8 tenured/tenure-track faculty). This probably is due to the fact that more CS graduates are headed to the industry sector rather than academia. One suggestion in regard of the low population of the graduate program is to proactively recruit more international students (from such countries as India and China) who need a graduate degree in US to join the industry workforce. The duration of the Master's degree is more than 24 months and seems to be rather long compared with national statistics. Duration that is 24 months or less for the Master degree would attract more students without necessarily lowering the qualitative standard of the degree requirement. A suggestion to this would be to provide the students with some flexible schedule such as at least one or two core courses be offered during summer either regular or online. A low admissions yield is noticed recently and is an area to be more proactively addressed and resolved by more extensive advertisement of the program with emphasis on DF specialty with solid CS background.

A concern about the Master program is its structure is oriented toward course requirements and project for graduation rather than research, while the CS department is in a position to strengthen their research infrastructure in order to start a new Ph.D. program with emphasis on digital forensics, and majority of the faculty is more than well-qualified to supervise research works for thesis options. It is noted in particular that all their previous and current students took the project option. The reviewer believes this is due to large population of part-time students. So, it is recommended to increase the population of full-time students who are more willing to get engaged in fundamental and theoretical research works than industrial applications.

A few more recommendations to the graduate program are: to incorporate more advanced topics and practices in graduate courses by assigning more research-oriented works than textbook-based study, which will make the graduate students more challenged and will also provide them a good exposure to research problems and an opportunity to identify their research topic for the thesis option; There are demands for more courses on more timely topics such as big data computing, cloud computing, which

are believed to be an important infrastructure topics to support digital forensics research; It is noticed that the current CIS core curriculum does not include Computer Architecture and it is recommended to be listed. Also, a theory course is recommended to be listed as a core such as Formal Language Theory. On the other hand, it is recommended to list Software Engineering on the electives.

It is recommended that the Comprehensive exams be discontinued in a constructive way, and instead either informally or formally encourage or require the graduate students to write a thesis that is publishable in a referred conference or journal supervised by their advisors, and the degree committee assess the quality of the research at proposal and final defense. This will help the CS department start a new proposed Ph.D. program in a seamless and effective manner.

Lastly, the name of the proposed new Ph.D. program is “Ph.D. in Forensic Computer Science” in order to distinguish the program from other existing CS Ph.D. programs at TAMU, Houston and Rice, to mention a few, while the program still be able to claim that all fundamental theory and practices in computer science are covered as well as digital forensics applications.

FACULTY AND RESEARCH

All assistant professors and most associate professors are pursuing high standard in their research, as reflected in their publications and funding. It was fortunate that during the visit, not much evidence of faculty fragmentation and overall lack of cohesion was noticed, or maybe some unless none at all. Anyhow there was no serious sign of negativity among the faculty. One thing noticed was a half of the faculty welcomed the visit of the external reviewers while the other half or less than half didn't seemingly show any interest in the visit.

One thing to note to the administrators is that as probably they are already aware of publication in CS field practices quite a different convention such that most of the conference publications are peer-reviewed and some are even much tougher to publish than some average archival journals. This has to be taken into account significantly during their annual evaluation. Also, it might be a great challenge for the higher administrator to retain some of the faculty unless a more attractive teaching and research environment is provided because the job market in the CS field is picking up.

It will be a challenge for the CS department how to collaborate with the College of Criminal Justice in the sense that who will be the lead on collaborations and how to establish a doctoral-level common infrastructure for projects in which to address computational tasks to be the primary, in other words the politics in a constructive sense, which will be a critical key to the success to major funding from federal agencies such as NIJ.

Another essential key to the success of the graduate program is resources, namely, more faculty and more staffs, and it has been figured that 2 more faculty in CIS, 1 more faculty in DF and 1 more faculty in IAS, and at least 1 more systems administrator (or DF director) at the departmental level to address the research facilities planning and management for the new Ph.D. program proposed, which is an essential support position. The need for more number of faculty line is to manage the teaching and research in a

more flexible and dynamic manner in case there are some sabbatical leave(s) to be accommodated for instance.

Addressing the teaching load of the faculty, it is necessary and imperative to reduce their teaching load not to exceed 2+2 in order to establish a successful and effective new Ph.D. program. Also, there should be significantly more incentive for the faculty to engage in online or hybrid type teaching for the quality of teaching.

Lastly, it was evident the department head was seriously overloaded with teaching who otherwise is to be capable of bringing in more external funding and research to the department as evidenced by his track record. It is recommended to reduce his teaching load to 1 course a year as practiced at other Ph.D. granting CS graduate program or 2 at the most.

FACILITIES AND EXTERNAL RESOURCES

Overall, space and facilities are adequate and appropriate to the current size of the department. The departmental computer infrastructure needs to address the need for higher end cloud servers and storage to meet increased educational demands expected for the new proposed Ph.D. program.