

William Paterson University  
Department of Computer Science

**Minutes of the 2011 Computer Science Advisory Board Meeting**

**Present:**        *Board members* – Jon Bentley, Leonard Bogdon, Thomas J. Marlowe,  
Jane Raso-Salmon, Megan Restuccia  
*College of Science & Health Dean* - Jean Fuller-Stanley  
*Information Technology* – Francesco Tedesco  
*CS Faculty* – Li-Hsiang Cheo, Erh-Wen Hu, Linda Kaufman,  
Cyril S. Ku (Chair), John Najarian, Bogong Su  
*Excused* – Gilbert Ndjatou  
*CS Staff* – Carol Parken, Marvin Kiss

**Date:**            Friday, April 29, 2011, 12:30PM-4:00PM

**Location:**      Room 216, University Commons

The meeting was called to order at 1:05PM. The Chairperson distributed to all participants a packet of documents including:

- the printed version of the extensively documented agenda for the overall meeting (accessible at: [http://cs.wpunj.edu/~abet/dept\\_docs/CSAB\\_Agenda04292011.pdf](http://cs.wpunj.edu/~abet/dept_docs/CSAB_Agenda04292011.pdf)),
- the printed version of the Advisory Board’s Purpose and the Roles and Expectations (accessible at: [http://cs.wpunj.edu/~abet/dept\\_docs/CSAB.pdf](http://cs.wpunj.edu/~abet/dept_docs/CSAB.pdf)),
- the printed WPUNJ CS recruitment postcard for prospective students,
- the CS Department Year-End Report of 2009-2010, which is accessible at: [http://cs.wpunj.edu/~abet/dept\\_docs/CS\\_YearEndRpt\\_09-10.pdf](http://cs.wpunj.edu/~abet/dept_docs/CS_YearEndRpt_09-10.pdf)
- the Student Retention Plan 2010-2011, located at the web address: [http://cs.wpunj.edu/~abet/dept\\_docs/CS\\_RetentionPlan\\_10-11.pdf](http://cs.wpunj.edu/~abet/dept_docs/CS_RetentionPlan_10-11.pdf)
- two tables from the WPUNJ Fact Book 2009-2010, specifically Table 4.8 “Retention and Graduation Rates for Full-time First Year Student Cohorts”
  - By major (page 1, for Fall 2003 – Fall 2010)
  - For the whole university (for Fall 1996 – Fall 2008)
- the Minutes of the 2010 CS Advisory Board Meeting, also available at: [http://cs.wpunj.edu/~abet/dept\\_docs/CSAB\\_Meeting\\_Minutes\\_04302010.pdf](http://cs.wpunj.edu/~abet/dept_docs/CSAB_Meeting_Minutes_04302010.pdf)
- the Fall 2010 issue of *WP*, the magazine of WPUNJ

In accordance with the agenda, the discourse proceeded as follows:

1. Given the circular discussion table orientation, meeting participants sequentially introduced themselves. A jocular note for appreciation was expressed to those who declined their invitations to the royal wedding of Kate and William for this meeting.
2. The **agenda** was reviewed and approved.
3. **Dean’s Report:**
  - a. Associate Dean Jean Fuller-Stanley welcomed the board members.

- b. With the focus on retention and new directions of development, the CS Advisory Board's contribution will prove vital both in industrial input and for enhancing professional opportunities.
  - c. The Computer Science Department is scheduled to move into the new Science Building East in early Spring 2012. Timing is critical and a seamless transition requires careful and preliminary planning/pre-conditioning. The pristine and strategically organized computer lab facilities and their proximity to other sciences will realize exciting prospects in future for interdisciplinary growth, development of CS-associated programs, and greater recruitment, retention, and achievement.
4. Chairperson's PowerPoint presentation of highlights from the **CS Annual Report**: Dr. Cyril S. Ku will be working on the CS Annual Report. Of particular note are:
- a. **New Departmental Website (in dotCMS)**: In accordance with campus-wide standardization, dotCMS is the document management system to which the main CS departmental pages will be converted. CS faculty pages will remain on the **cs.wpunj.edu** SUN server unchanged and that link will remain externally accessible. To accommodate the dotCMS model, **cs-cit.wpunj.edu** will be used.
  - b. **The CS Department's New Home** will be on the 5<sup>th</sup> floor of the New Science Building East Wing. Details of the fixtures and the move process are still being worked out. We will have four new labs. The renovated East Wing will be completed in early October 2011. Classes in those facilities will begin in Spring 2012.
  - c. **ABET Accreditation** attainment is a sign of distinction and integrity, a great accomplishment. A cursory review of local statistics shows that only seven programs in NJ are accredited. We are accredited up to 2013-2014. Continuous assessment, adaptive improvement, and documentation are hard work but our commitment and determination remain adamantine.  
 We eliminated two weaknesses and one concern but two concerns remained. One can be resolved with more Graduate Surveys (in the area of objectives and assessments). The other is faculty currency. Dr. Ku supports faculty participation in conferences with funding and travel reimbursement. One perceptive distinction arose: Do faculty bring conference knowledge back and incorporate it in lectures or disseminate it in other forums?
  - d. **CS Major and Minor Enrollment**: Another insightful aspect of assessment was discussed: Do we survey the students who do not succeed? One sad note is that some students are dissatisfied with the initial treatment they receive when they enter WPUNJ, prior to meeting any CS faculty, as their initial schedules are assigned prescriptively, not individually by CS advisors. We need to focus on determining/identifying the negative factors in order to improve the situation. CS major enrollment was 144 students in Fall 2010, a maxima in the past 5 year interval (i.e. 2006 (121), 2007 (129), 2008 (117), 2009 (118)). An initial, unofficial estimate is that CS minor numbers about five. The number of CIS minors is comparable. New methods of promoting the major and both minors are required.

- e. **Course Development** is one area of intense recent activity, highlighted below:
- i. To increase class hours and provide a more rigorous foundation in the critical area of **Data Structures, CS 342** is now a four-credit course (previously three).
  - ii. To address the rise in the communicational and networking domains of CS, two new courses were created to promote modern trends in the discipline. Both are implemented as Special/Selected Topics (CS 399). In Fall 2010, the area was “**Net-Centric Computing**”, covering web-based programming and scripting on clients and servers. In Spring 2011, the subject was “**Computer & Network Security**”, also a strong area of interest given the greater and more organized incidents of cracking (even experienced on our departmental SUN server), computer crime, security breaches, other pathological network behaviors, new encryption algorithms and counter-measures, and the rise in national security directives. Even non-majors have expressed interest in these electives. With large enrollments both semesters and the resolve to promote the modern networking aspects of computing (texts occurring in our ABET self-study and encouraged by external ABET recommendations), these courses will have an established place (and unique permanent course numbers) in the CS, CIS, and CIT programs.
  - iii. **UCC (University Core Curriculum)** has replaced the classical General Education model. Given the wonderful voluntary efforts of individual faculty, UCC now classifies:
    - six courses (CS 201, CS 215, CS 230, CS 240, CS 350, CS 480) as Technology Intensive.
    - one course (CS 480) as Writing Intensive.Our long terms goals (involving works in progress) include getting:
    - more CS courses recognized as Technology Intensive,
    - CS 350 recognized as a Writing Intensive,
    - UCC to recognize our course proposal in the Globalism area.
    - UCC to recognize our course proposal in the Well-Being area.Having prior experience with these issues, Dr. Bentley will work with Dr. Ku on the Writing Intensive situation.
- f. **Program Development:** While an arduous undertaking, the new CIT (Computer Information Technology) major proposal and associated documents/forms are nearly complete. They will be submitted by the end of this semester (Spring 2011). The goals, objectives, and learning outcomes of the program and curriculum are more practical and less theoretical. At this point, the CS Advisory Board presented several compelling reasons to rename CIT (as IT), arriving at an implicit informal consensus to that effect. Foremost among the cogent arguments is that when prospective students compare programs of different institutions, most will not recognize CIT as a common term while IT is ubiquitous. Applying even a perfunctory search on Google confirms this. As initial enrollment is vital, any obscurity in name will prove

devastating in numbers. Likewise, most institutions of higher education use the term IT, not CIT. In New Jersey, the unique term may be interpreted as eccentric, not mainstream, an oddity. Why court disaster?

- g. Awards:** Dr. Kaufman received the University Award for Research. Last year, Dr. Hu got the University Award for Teaching. Two years ago, Dr. Ku got the University Award for Service. All three were congratulated for their accomplishments.
5. **Discussion Session: Effectiveness of the CS Advisory Board (CSAB)**
- a. Efficacy:** The CS Advisory Board has proven effective in:
    - i.** providing industrial perspectives/input,
    - ii.** providing guidance/recommendations for enhancing our program,
    - iii.** serving as an important component in the CS program's ABET accreditation.
    - iv.** Conducting procedures and fulfilling roles and expectations specified in the: [http://cs-cit.wpunj.edu/cs/assets/advisory\\_board/CSAB.pdf](http://cs-cit.wpunj.edu/cs/assets/advisory_board/CSAB.pdf)
  - b.** The CS Advisory Board existed before **ABET** (approximately one decade).
  - c.** Composition: The board consists of ten members but approximately half showed up this time.
  - d. Timing and Frequency:** In recognition of this last statistic, the discussion shifted towards fine-tuning meeting periodicity. Do we need more meetings? Less? Current practices are that they occur toward the end of an academic year, usually on the last Friday of April or the first Friday of May. Alternate considerations involved alternate modes of aggregation without physical proximity, such as video-conferencing or at least voice-conference calls; however, these alternate modes of communication would be infeasible and less productive. Another hypothetical consideration is: Why not have a whole day meeting? This idea also did not receive much support.
  - e. Recommendations** (individually attributed):
    - i.** MR noted that we need more meetings, more often. Once per semester will provide a more dynamic, less static mode of operation. Subsets working in teams together would be more flexible and less time-constraint-bound. Video conferencing may be problematic.
    - ii.** JB cited the need for more continuity. An effective approach he applies at LeHigh and West Point and which would be great here is to talk to or have lunch with students. Another possible event is to judge/assess student presentations/research. The unifying principle/theme is to have more frequent "minor" interactions, to have more events to which students can come. Secondly, this time of year is too busy; we need to change the day to a less pressured one (for all parties concerned). We need to avoid the end of semester crush. Thirdly, have meetings only as long as needed (in duration).
    - iii.** TJM concurred, adding that we should schedule meetings on the day of final project presentations as in the capstone course CS 480 Seminar. As an added benefit, they can then also meet with students directly.

- iv.** MR then shifted the discussion towards the issue of what other expectations (of the Board) would faculty share, so as to facilitate program success.
- v.** In addressing this, EH introduced a historical context to this request. Several years ago, CS needed a SUN server. Frank provided a supporting recommendation to administration, confirming our need and the concomitant request.
- vi.** LB noted the internal characteristic of these and related proceedings. Both CS and IRT/IT/IS are beginning to working more cooperatively together enterprises like these.
- vii.** JB discerned this dual aspect of the CSAB expectations and recommended they be partitioned. The CSAB provides an internal (intra-university) function as a forum for faculty and staff to discuss and interact. Independent of this, the CSAB serves as a board of review and discussion, an external function.
- viii.** CSK had distributed the second PPT on the CSAB Roles and Expectations and revisited it for our examination/consideration at this point. Cyril requested that the CSAB provide feedback (by email) not just on this document but also in a broader context. He noted that ABET congratulated us on this pillar of the program.
- ix.** AC stated that ABET will want to review the activities of the CSAB.
- x.** MR insightfully noted that in this, we need to have the role reflect and include more of the industrial perspective.
- xi.** LB cited that the CSAB needs to consider Retention issues in terms of student engagement. How can IS and Networking further the student engagement process? We also need to discuss Internships and the parameters thereof. Also, we need to establish more events and presentations in which students can understand the industrial viewpoint and career outlook.
- xii.** FT stated that we need to build stronger relationships in communicating between CS and IS on campus.
- xiii.** JB cited that in these seven lean years of drastic budget cuts, we need to interact more often. One splendid manner of accomplishing this is to have WPUNJ IS/IT alumni come back and talk/give presentations to CS students.
- xiv.** At his point, AC distributed the flyers she developed and distributed for the demonstration/presentation titled “Jeopardy! – The Watson Challenge”. For this event, she arranged a joint SGA/ACM student chapter meeting at which our alumni Tom Mitchell (1985 CS graduate, presently at IBM) presented and presided over the student participatory activities. Ten CS students attended this and were enriched in terms of professional growth and appreciation of our discipline.
- xv.** EH noted that another CS alumni presentation was given last week. Robert Tavoularis gave an excellent talk. These events instill a wonderful sense of enthusiasm in our students. The news media

presents such dismal futures but these events promote a sense of optimism and hope.

- xvi. TJM acknowledged that in these lean years, we need to get more input from the CSAB. Recommendations can cut costs or offer alternative points of view and solutions in addressing problems.
- xvii. LK stated that we need more fresh, recently graduated CS faculty, infusing some of the newer sub-disciplines, new methodologies, and reflecting, to a greater degree, the state-of-the-art in research and technologies.
- xviii. JB suggested that the CSAB can make recommendations to the Dean on this need for new faculty.
- xix. TJM noted that in the Advisory Board's documenting this recommendation for new faculty, we must persuasively elaborate reasons justifying such an expense (in light of these lean years).

**f. Guest speakers: A Pathway to Student Inspiration in CS:**

- i. JB retrospectively reflected on a club talk on Binary Trees which sparked his interest in the subject in the distant past. Student engagement and extracurricular activities are key motivating factors molding the minds of the next generation.
- ii. AC noted that yesterday, our students got connected to IBM at the Jeopardy exposition. These are stimulating opportunities to bridge the daunting expanse between our students' rigorous studies in academia and the vibrant outside world of occupational achievement and current advances at the forefronts.
- iii. JB proposed the need for a one credit course to change the culture and motivate students while enlightening them. With enthusiasm, JB, TMJ, and JRS volunteered to give presentations for this course. CSK recounted RM's presentation last year on the "Industrial Perspective".

6. **Industry Research Perspective:** Dr. Jon Bentley gave a fascinating talk on "Dimensional Analysis". By taking antithetical duals in several individual categories, discerning the positive from negative, and then applying the cross-product as a constructive operator, we realize a higher dimensional structure and thereby formalize higher-order, attainable, multiple-objective-function optima (and their associated pedagogical policies and procedures of implementation, for reaching those states). For example, take the following dichotomies: Theory versus Practice, Thinking versus Building..., noting that students like the latter in each pair. We can attain the conjunction of those latter goals by the right pedagogical activities.

We tend to think in ("gravitate towards") narrow, linear terms. We need to remove these reductionist mind-sets and teach in the dual space. So, when faced with horrible constraints, think in higher dimensional spaces of alternatives and arrive at creative solutions. In accordance with this principle, we observe a recurrent historical trend, that "Great art is often created under a tight budget." Like the primal-dual algorithm, we need to venture into that dual space. Several other examples were given, which were then also intertwined with the formal dimensional analysis methodology, which we all cherish for our classical scientific pasts.

7. **Discussion: Retention and Graduation Rate:** Cyril emailed packets documenting present realities/issues about the Retention and Graduation rate. Our retention rate has much room for improvement. While it attests to the rigor of our program, these rates are not a positive feature. As an application of the prior presentation, it was recognized that a multi-dimensional analysis is required to diagnose the roots/mechanisms causing the problem and then correct it. Positive note:
- a. with GE reductions, we decreased graduation requirements from 128 credits to 120 credits.

Negative notes:

- a. Freshmen get pre-packaged course assignments forced on them by the Registrar's office. Freshmen get no choice or individual-based course selection reflecting their interests.
- b. CS is not in the UCC Areas categories. We are working on this.
- c. Worse, the University is hiring advisors (i.e. professional counselors who have no CS expertise and no understanding of CS students needs.) They have control on advisement for the first two years. This will destroy all Science and structured areas of study, where prerequisites and foundation courses are needed for all full four year span. Students will lose two years due to a bad policy.
- d. Compounding this is that many high-school students are sent to Community College. This also magnifies the numbers of students who will drift for two years and then expect the impossible (i.e. expecting a CS degree in two years).

Corrective Action/Treatment:

- a. Train the three University-hired advisors on how to handle CS. Explain the prerequisite partial order, the resultant timely graduation issues, and prescribe a course of action when advisors encounter CS freshmen and sophomores. We did these in the past when giving the registrar's office guidelines on MATH 115 and CS 230 requirements for recently admitted students. We may need to vigilantly and semesterly review the records of CS freshmen and sophomores to make recommendations for advisors or directly to the students in conjunction with their advisors.
- b. Dr. Bentley suggested technical writing for formulating an article to the Star Ledger documenting this problem for CS students and its causes.
- c. Transfer credits are proving a major point of contention. The faculty senate is debating the advisement problem.
- d. Dr. Ku posted a PowerPoint on the retention rate.
- e. We need to prune out students who have limited potential for success and perhaps route them to areas of interest and proficiency, such as CIT or minor degrees. CS and IT can grow simultaneously. It need not be a zero-sum game (as some are concerned). Some schools are examples of this symbiosis and don't exhibit zero-sum characteristics.
- f. Another factor causing retention problems is that many students entering CS 230 are weak in math. Math majors in CS 230, studying in order to become teachers, are strongly committed. The retention problem becomes also a

recruitment problem, one of attracting mathematically capable students to CS and to our program at WPUNJ.

- g. As part of the solution, the CSAB expressed interest in attending our Yearly Welcome Party to new students.
- h. The CSAB would also like to analyze the University Policy on Advising and provide a documented commentary on it.
- i. Another issue, one of a more cultural nature, is that faculty should direct students to get assistance from the tutors. Students with the greatest needs often don't go to the tutors.
- j. Dr. Ku pointed out the retention plan (in the distributed documentation at the meeting). We need metrics to determine causes of the retention problem. Also, what about part-time students?
- k. Coinciding with retention is the issue for finding good tutors. There are good job prospects elsewhere and so attracting (and carefully selecting) potential tutors is a difficult and time-consuming task. On a tangential point about jobs, many CS freshmen don't believe there are good job positions awaiting them. CS Seniors get jobs, as do some juniors; yet sophomores and freshmen don't believe it.
- l. In address some retention problems at the source, we need to communicate more with our county community colleges, so they can advise their students to take the right courses for WPUNJ CS.

#### 8. Discussion: Fund Raising

- a. CSK noted that the departmental budget is in good shape. The question arose: What do other universities do for alumni fund drives?
- b. TJM suggested that we ask administration to designate money we (CS) get for a CS-only account, not just some general funding account. We need to get this promise not to redirect in writing.
- c. JB concurred, to carefully have funding routed to our specific cause, not some general budget pool.
- d. EH suggested that some funding should be applied to buy textbooks for the department's library. Given the exorbitant cost of textbooks, students need and appreciate this manner of sharing the textbook with them rather than an outright purchase, given many of their desperate economic plights.
- e. AC noted that demographics of students at other institutions such as (say, for example) Princeton are different from ours and so likewise relative to retention [and even textbook issues].

As a final request [as a matter of preferable procedure], a draft of the minutes should be forwarded to the CSAB before a finalizing version is issued, so they can provide edits.

The Chairperson and CS faculty thanked the Advisory Board for their time, effort, expertise, and insights. The meeting was adjourned on this note.

Respectfully recorded by  
John Najarian