William Paterson University
Department of Computer Science

Minutes of the 2010 Computer Science Advisory Board Meeting

Present:  Board Members – Leonard Bogdon, Michael Merritt, M. George Mitwasi, Megan Restuccia, Gregg T. Vesonder;
College of Science & Health Dean – Sandra DeYoung;
CS Faculty – Li-Hsiang Cheo, Erh-Wen Hu, Linda Kaufman, Cyril S. Ku (Chair),
John Najarian, Gilbert Ndjatou, Bogong Su;
Adjunct CS Faculty – Jaehyun Kim;
CS Staff – Carol Parken, Marvin Kiss;

Date:     Friday, April 30th, 2010, 12:30PM-3:30PM
Location: Room 216, University Commons, William Paterson University

The meeting was called to order at 1:15PM. The Chairperson distributed to all participants a packet of documents including:

- The printed version of Dr. Ku’s presentation for the overall meeting (accessible at: http://cs.wpunj.edu/cs/advisory_board/CSAB_Agenda04302010.pdf);
- The printed version of Megan Restuccia’s presentation “Current State of the Industry”;
- A directory of advisory board members and other meeting participants, including affiliation and contact information;
- Minutes of the prior (2009) Advisory Board meeting;

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

1. Given the circular discussion table orientation, meeting participants sequentially introduced themselves.

2. The agenda was reviewed and approved.

3. Dean’s Report and respective ensuing discussions:
   a. Dean DeYoung welcomed the board members.
   b. She outlined the ramifications of the declining economy. We face a severe budget cut of 10%. In 2009-2010, a 7-day furlough was used to resolve the budget gap. Next year, we may be contemplating a 3 week closure period. The exact outcomes are indeterminate, contingent upon the outcome of negotiations with the governor.
   c. Our University will have a new president, Kathleen M. Waldron (http://www.wpunj.edu/president/index.dot), who will develop long term plans for continual resolution of this situation.
   d. Another positive note is that enrollment is strong (as a key revenue factor).
   e. An alternate strategy being proposed is a tuition-hike. Such a move has serious contraindicating tradeoffs. Besides affordability, many of our students work 20 or more hours per week. Higher tuition reduces their effective study time and effort.
f. The CS department is developing a **CIS** (Computer Information Systems) major proposal. We need at least one more recently graduated and industry-oriented faculty to further infuse the current diverse aspects of the discipline’s forefronts. The Dean noted that the Provost is sincere in adhering to the Academic Plan and therefore supports such a measure but first we must create the new CIS major program.

g. Among **other financial issues** discussed was the retirement healthcare model’s change. More employee contribution will be expected in the future.

4. **Chairperson’s PowerPoint presentation of highlights from the CS Annual Report:**
   
   **a. ABET Accreditation Visit of Fall 2009**
   The ABET accreditation evaluation team visited and reviewed our department in November 2009. The overall observations and conclusions were very positive. Three directions for enhancement were recognized. We have aggressively taken every measure to incorporate effective solutions and improvements to promote student success and program excellence:
   
   i. **New Program Educational Objectives** were formulated based upon the new ABET criteria and a survey of numerous universities and colleges. Upon approval, they were added to the department web page.

   ii. **Alumni Data Collection** methodology and forms were revised. A group of CS faculty met with IRA director Jane Zeff and staff to modify the periodic surveys to reflect CS needs and logistics/timing of distribution. Besides conducting immediate survey collection, long-term plans were made to augment the present technologies with those of social networking, specifically Facebook.

   iii. **Program Quality Assurance** was discussed. The model we use is an annual Course Binder Review. We will continue using this model. Every year, we choose a subset of courses, each year’s courses being the successors of those of the previous year, following a 4-year cycle. Last year was CS201 and CS230. This year, CS240, CS260, and CS280 were reviewed. Eventually, as every course is progressively encountered and assessed, the resultant aggregate is a complete program review, with assessments, improvement, and feedback.

   b. **Course Development:** Several course modifications were made this year. Besides the Program Quality Assurance mentioned earlier, other course improvements discussed included:

   i. Increasing the credits for CS342 (Data Structures) to 4 credits, so students can work on more robust and professional projects while comprehensively covering the board range and depth of topics and programming techniques for CS342.

   ii. Uniform development, application, and thematic recurrence of UML as a preferred representation utilized in the program design process in CS240 (Computer Science II), CS342 (Data Structures), and CS350 (Software Engineering).

   iii. To complete the professional growth from reinforced UML coverage (cited above), it was agreed that faculty would encourage and support CS350’s (Software Engineering) design work being used to produce completed
implementations as project work in CS480 (Senior Seminar). In this manner, students would experience and construct a substantial programming project.

iv. Offering CS399 Net-Centric Computing in Fall 2010, to promote Web-based programming.

v. Offering CS399 Computer and Network Security in Spring 2011, a hot area in the present world of cyberterrorism, cracking, ID theft, and technological pathologies of rising national and global concern.

vi. UCC and Technology Intensive development of 3 courses for GE.

c. **Program Developments** include the transition to a minimal GPA of 2.0 for transfer students to enter into CS and the CIS major proposal. Megan presented (at this meeting) on the “Current State of the Industry”, providing an industrial perspective on the latter (i.e. CIS major).

d. **Department Activities** encompass:
   i. All CS lab PC’s have a 3-Year replacement policy;
   ii. 100% computing resource uptime this year;
   iii. Deployment of energy efficient hardware uniformly and installing a new server;
   iv. Five seminars, colloquia, and guest lectures;
   v. A large UPE Honors Society Induction and Award Ceremony with 4 new student inductees and 2 new faculty members;
   vi. A new student welcome party and graduation breakfast;
   vii. Student lab team (coordinated by Dr. Hu), resulting in that 100% uptime (item ii above);
   viii. Two student research groups (Dr. Su’s on DSP and Dr. Kaufman’s on Fiber Optics Design);
   ix. In the past, we took students to external Student Conferences; we hope to revive this practice. Among others, there is the IEEE Symposium on Microwave Technology.

e. **Internship Discussion Forum**: We have had internships but only on an individual basis. We need to develop an established, on-going program. It is recommended that we look into building stronger ties with the industry. We met with a Cisco representative (Mike Kowal) last year but the slow economy reduced potential opportunities.

   An alternate approach is to target those firms and groups which would target our students. Do a little marketing and outreach to create ties. However, for the last two years, we dedicated most of our available time towards ABET. Career Development, CS faculty, and other sources send information on new positions to the Chairperson, who posts them on our departmental bulletin boards and forwards them to students.

   Len Bogden presented some opportunities on campus but those are generally more work-study in nature. He always seeks students to test, develop, and deploy new technologies in support of the university infra-structure. We appreciate his support. Several success cases developed over the years.

   In summary, the common consensus is that exploring and establishing internships and work-study promotes the professional growth aspect of education.

f. **Discussion on Cloud-based Alternates to Classical Computing Platforms**: Cloud-based computing was discussed, with a focus on incorporation into the curriculum.
On May 18th, the campus-wide student email system will be moving over to Microsoft. Student email accounts will have the same addresses and interface/services will be the same but the underlying platform is cloud computing. After graduation, students may opt to continue with Microsoft. Masters student accounts will automatically continue beyond graduation.

A good CIS project would be to buy, support, and administer a cloud arrangement. Cost avoidance is the primary benefit of cloud computing. Virtualization is a modern trend now and we need to look at innovative manners of exploring it.

5. To contribute to the CIS directive, Megan gave a PowerPoint presentation on the “Current State of the Industry”. Two key issues presented were:
   - What do students need to study?
   - What are prospective employees looking for?

The WPUNJ Alumni Survey Data was reviewed, followed by those from the Annual Dice Survey. Highlights and inferences drawn were:
   a. Survey demographics show that 49% of IT professionals don’t have degrees.
   b. 35% of IT professionals have BA/BS degrees (most in CS or related areas).
   c. Of high growth areas, the top two are Software Development and Security.
   d. On the same chart, the bottom three are being outsourced are Desktop Management, Virtualization, and Operation Incident Management (non-security).
   f. In correlating attributes with degree of influence in hiring decisions, the top 5 (most sought) characteristics (in descending order) are:
      #1 Work Experience
      #2 Accredited School
      #3 Internship
      #4 Cutting Edge Courses
      #5 GPA
      ...
      Certifications are very low among priorities.
   g. Desirable skills for which prospective employers look (descending order) are:
      - Good Interview Skills,
      - Soft Skills (Humility, Personality, Drive, Capacity to Learn, Versatility),
      - Networking
      - Cultural Fit
      - Unique Abilities (such as Open Source Projects)
      - Provable Knowledge (conceptual and deeper knowledge)
   h. Dice noted that Technology was not hit much by the economic crisis. An interesting relevant point was to expect that every 36 months, changing jobs will raise salaries, so staying current and progressing are necessary. Life long learning is a vital career principle for students. Perhaps the jocular phraseology of “infusing new blood” is a valid faculty recruitment criterion in promoting student currency. In contraposition, some Ph.D. students have very narrow perspectives, hematological acquisition needs to reflect several dimensions for optimal pivoting.
i. On a different note, we need to look into placing our students into the Government and Security/Intelligence communities.

j. The category “Top Schools” is not as critical as “Accredited Schools”.

k. Megan presented an interesting idea to promote industrial ties. In the context of our seminar course (CS480), invite industrial sponsors to give a prize to the best seminar. On this note, one of our students created an ftp server.

l. Our CS399 Special Topics course offers opportunities to present new sub-disciplines in CS that fall outside the classical topics. Prior offerings include: Robotics, Neural Nets, Computer Ethics, and Networked & Distributed OS, Game Programming. Now, we have the Net-Centric and Security offering. CS495 Independent Studies provides this option on an individual basis.

m. US technology salary trends are upward but expertise remaining current is a critical responsibility.

n. Communicative skills are important. Purdue requires a public speech course; so does WPUNJ, in particular, COMM110 “Speech in Action”. Beyond just communications, essential interview skills include eye contact and appropriate professional dress, decorum, and demeanor. Career development and also professional ethics fall within the scope of CS480.

o. To ameliorate upon this model, we can invite industrial representatives to assess communicative skills of seniors in CS480. One department actually has the Advisory Board review them. It was suggested that we invite faculty from the WPUNJ Business College to come and assess student presentations.

p. Jon Bentley and Gregg T. Vesonder volunteered to come to CS480 presentations to assess them.

The board and faculty applauded in appreciation of Megan’s presentation.

6. Advisory Board’s three recommendations:
   The Advisory Board provided the CS faculty with three primary recommendations to carry out.
   a. Suggestion #1: Need an Annual Department Brochure featuring faculty and features (accomplishments).
   b. Suggestion #2: Select and invite some alumni to the Advisory Board Meeting.
   c. Suggestion #3: Produce a 2 minute video clip of Alumni titled: “What the WPUNJ CS experience meant to me”.

7. Advisory Board Discussion Forum:
   a. Recruitment and Diversity: A Problem Looming Large.
      In the past, African American and Latino students were more numerous than now. In CS, the percentages are very low. Gender is another dimension of underrepresentation that has exacerbated with time. We need to consider an NSF grant to promote students recruitment in CS. We have had proposals in the past but we need a renewed effort. For recruitment, we used to bus students from local high schools to WPUNJ for faculty to student recruitment and bonding. It worked well. We used to
have a College of Science Day wherein student posters and faculty presentations were the key exhibitions.

b. Solutions to the Recruitment and Diversity Problem.

The following solutions were suggested to the above problem:

i. Use our website to market attractive features and aspects of the CS department. For example, put student projects online so others can be impressed and inspired by our students’ accomplishments.

ii. Use social-networking and media to facilitate in attract and recruit students.

iii. In introductory courses, give presentations on job growth in CS. Include some of the information from Megan’s presentation.

iv. When high school students came over recently in a College of Science and Health event, CS was not invited. We need to look into that and rectify it. Linda did some great outreach work by going to a local high school. Gilbert will work on an NSF grant proposal to promote recruitment.

v. We need to reach out to local high schools which already have CS programs. This would capture the interest of students with greater potential interest in CS and early bonding to the discipline. For local high schools which already have CS programs, establish relationships with those CS and technology teachers in high school.

The Chairperson and CS faculty thanked the Advisory Board for their time, effort, expertise, and insights. The meeting was adjourned at 3:30PM.

Respectfully recorded by

John Najarian