

**Documents on Service submitted by Abhik Roychoudhury**

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**Letter of Appreciation from NUS Vice Provost's office**

# Application for promotion to full Professorship at NUS

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## Service to University by Abhik Roychoudhury

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During my employment at NUS, the service initiatives I have been involved in, include the following.

1. Vice Dean of Postgraduate Studies [2013-16] at NUS School of Computing.
2. Assistant Dean of Postgraduate Studies [2011-13] at NUS School of Computing
3. Chairing of the Publications Committee of Computer Science Department, NUS [2010-13], and coordinating a year-long exercise on research evaluation metrics on behalf of CS Department [2011-12].
4. Area leader of Security Area in CS department Executive Committee, since 2013.
5. Associate Professor Representative in School of Computing Executive Committee – 2010.
6. Assistant Professor Representative in School of Computing Executive Committee, 2002-03.

Some specific activities I undertook in the roles described in the preceding are elaborated.

### 1. Vice Dean of Postgraduate Studies, NUS School of Computing [2013-16]

#### Enhancing transparency in admissions process:

In this role, I have worked towards enhancing transparency in the student admissions process. In School of Computing, student admissions are handled by a school level Graduate Studies (GS) Committee of twenty (20) academic staff members. For PhD student admissions, the members of the committee review the applications, and then the shortlisted candidates are interviewed. Previously only the short-listing of candidates was done by the Graduate Studies Committee. I have taken initiatives to work with the Graduate Studies Committee such that the *final* decisions on acceptance / rejection are taken by the *whole committee* based on both the reviews and interviews.

#### Streamlining timeline for milestones in PhD program:

I have also steadily worked towards streamlining the timeline for PhD program milestones such as Qualifying Examination, Thesis proposal, Thesis submission, Thesis Defense and Degree Conferment – so that the degree conferment is not unduly delayed for students. This includes implementing internal measures, such as sending regular reminders to examiners over and above the reminders from Registrar's Office, so that PhD examination reports are submitted in due time. My office has also worked with Computer Science Department Curriculum Committee recently to look into revamping the PhD Qualifying Examination format for CS Department. Overall, the measures initiated to streamline the PhD milestones include the following. These measures should show results over the next few years.

- requiring supervisors to give a timeline for the presentation, whenever thesis proposal submissions are made by the student

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- fixing a timeline for thesis defense whenever thesis is submitted by graduate student (was not being enforced in our school earlier)
- enabling the revision of Qualifying Examination for CS department to cut undue timeline
- contacting representatives of research areas which have a patchy record of long standing PhDs
- generating a reminder mechanism of regularly sending automated reminders to PhD thesis examiners, over and above the reminders from Registrar's Office.

## **Putting greater emphasis on Career Services and Student Placement:**

In my capacity as Vice Dean, I have given greater attention towards high quality placement of students after their masters and PhD degrees. We have sought to increase awareness that apart from high quality student intake, it will be crucial for us to work towards high quality student placement. *Towards this goal, I have proposed the starting of a first-ever annual Career-services workshop series at NUS School of Computing.* This is to make the graduate students more aware of the tips of job-search, CV writing, seeking suitable internships and such matters. We are also inviting young Assistant Professors who have just joined NUS School of Computing to share their experience in their recently concluded faculty job search. This gives the students a flavor of what it entails to search for jobs geared at a research career. We have also invited colleagues from the local industry who are interested in hiring PhD graduates.

We are working with existing personnel in NUS Career Centre to share their expertise on soft skills also, in the workshop. Conventionally NUS Career Centre has focused more on soft skills and other relevant training more for undergraduate students. In addition to making it available to graduate students, we are focusing on matters which are more relevant to PhD students – such as job search for a research career. Currently, there is no significant help from NUS/School of Computing to the graduating PhD students in terms of awareness about searching for research jobs in Singapore and abroad. Through this workshop, we are making a first step in putting greater emphasis on placement of PhD students, rather than only concentrating on PhD intake. One of the Assistant Deans in Post-graduate Office, Prof. Jiang, is taking the initiative to organize the placement/career services workshop.

## **2. Assistant Dean of Postgraduate Studies, NUS School of Computing [2011-13]**

In 2011-13, I served as one of the two Assistant Deans in the Postgraduate Division at NUS School of Computing. In this role, I conducted a significant amount of outreach activities and helped improved enrolment into our PhD program. I also initiated and ran an annual workshop series to enhance engagement with students / faculty from India/South Asia, and this workshop has been successfully run for 3 years. Following are some notable steps achieved during my term as Assistant Dean.

### **Improving PhD Student Intake:**

The workshop series has led to substantial engagement in both graduate education and research. In graduate education, this has led to a word-of-mouth campaign about NUS School of Computing research and PhD programs among the students who attend the workshop. We allow for students to apply for the workshop attendance, and each year we receive around 150 applications, out of which we select 25-30 students. The selected students undergo a one week intensive workshop where they are exposed to the research work of NUS faculty members. Thus, they are much more aware of NUS's research and PhD programs which they share with their friends/colleagues at home universities. Over the years, as a result

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the application numbers, quality and yield (how many of the offered candidates register) has substantially improved for our PhD programs. As an illustration – I mention the following data that was captured earlier by Post-graduate office to gauge the effectiveness of the exercise.

Application Season	# of PhD Applicants from India	# offered from India	# registered PhD students from India
Jan 2011	17	2	2
August 2011	31	5	1
Jan 2012	23	7	6
Aug 2012	42	9	8

The efforts of engagement with India were started in Jan 2011, hence results of outreach can only be visible from Jan 12 admissions. Thus, in Jan 2012 and Aug 2012 admissions (after the outreach efforts kicked in),  $6 + 8 = 14$  students from India have joined the PhD programme at NUS School of Computing. In comparison, just one year earlier, in Jan 2011 and Aug 2011 admissions, only  $2+1 = 3$  students from India joined NUS School of Computing PhD programme! We also studied the Indian universities from where we are able to attract PhD students in the latest admissions and we found that the students come from well-known Indian institutes, such as IIT, BITS, BHU and CoEP.

### Member of University level task-force for new Graduate Admission System

During my term as Assistant Dean, I was also appointed to a University wide task force (chaired by Associate Provost Prof. Mohan Kankanhalli) for building a new graduate admission system for online submission and evaluation of applications to the university-wide graduate programs. As a member of the task force, I joined the regular meetings and discussions, and also contributed to the requirements document which has been given over to NUS Computer Centre for implementation. The implementation of the new Graduate Admission system is almost finished, and it is being deployed from 2014 for the whole University.

A letter of appreciation of my efforts from the Vice Provost (Education) is provided as an ANNEXURE to this document.

### Online application evaluation for School of Computing Postgraduate Office:

I have earlier mentioned about the workshop started at NUS School of Computing Post-graduate office for greater engagement with India/South Asia, and attracting PhD applicants from India/South Asia. The workshop attracted applications from 150 students each year. The application evaluation for School of Computing India workshop was done online using Share-point. This reduced the carbon footprint and allowed for efficient work-flows. This was an experimental step that worked well (I worked jointly with Ms. Agnes Ang to make this happen).

Subsequently, I proposed to SoC Graduate Division that our regular PhD application evaluation also be done online without printing, and SoC Postgraduate Office has adopted this practice. As a result, the Masters and PhD application evaluation in School of Computing could be made more efficient. Previously, for multiple reviewers of an application, the hard-copies had to be batched and circulated between the reviewers. This is now unnecessary, and reviews to the same application by multiple

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reviewers can now be done in parallel, since the reviewers view and evaluate the applications online. Subsequently, some of the practices of the online application evaluation done at School of Computing have been adopted by the university level task-force looking into a new graduate admission system for the entire university.

## **3. Chair of Publications Committee, CS Department 2010-13.**

I served as the chair of the Publications Committee for three years in the Computer Science Department. The main task of the committee is to maintain a ranking of journals and conferences. The ranking is primarily used for decisions on funding travel by staff members.

### **Co-ordination of a task-force to recommend research evaluation metrics:**

During my term as the chair of the committee, we were also tasked into studying research evaluation metrics for academic staff members. This exercise was conducted over a two year period. Our task involved preparing strategy papers, collecting and studying inputs from colleagues, conducting a town hall meeting with colleagues, meeting with Department and School Executive Committee for their comments, and meeting with Heads of other departments at NUS for their inputs. The final report was submitted to the CS Department Head in November 2011.

## **4. Area leader for Security area in CS Department Executive Committee**

In this role, I helped articulate hiring priorities in the Security area by discussions with colleagues in the area, as well as with the department management.

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## Service to International Academic Community by Abhik Roychoudhury

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### ACM Distinguished Speaker

I have been an ACM Distinguished Speaker since 2013. As shown in my ACM speaker profile, [http://dsp.acm.org/view\\_lecturer.cfm?lecturer\\_id=4663](http://dsp.acm.org/view_lecturer.cfm?lecturer_id=4663) the topics I talk about, include software debugging/ software engineering and real-time embedded software. As part of the new appointment, I am currently undertaking lecture tours in various universities and organizations. In such lecture tours, the airfare is reimbursed by ACM, and the other expenses are borne by the host university / organization where I am speaking.

The Association for Computing Machinery (ACM), the world's largest educational and scientific computing society, “ provides colleges and universities, corporations, event and conference planners, and agencies - in addition to ACM local Chapters - with direct access to top technology leaders and innovators from nearly every sector of the computing industry.” The ACM Distinguished Speaker program features “renowned thought leaders in academia, industry and government, speaking about the most important topics in computing and IT world.” The DSP committee “votes on the acceptability of a nominated speaker. Each DSP Committee member will rate the nominee on a 1-to-5 scale; this is the rating scale used by ACM's Fellows Committee”. This shows the selectivity of the ACM Distinguished Speaker's program. I provide the list of academics who have listed their interests as Software Engineering, and are ACM Distinguished Speaker, all but one of them are full professors in their respective institutions.

- Margaret Burnett, Professor, Oregon State University, USA
- Laura Dillon, Professor, Michigan State University, USA
- Philippe Kruchten, Professor, University of British Columbia (UBC), Canada
- Leon Osterweil, Professor, University of Massachusetts Amherst, USA
- Hanan Samet, Professor, University of Maryland College Park, USA
- Sandeep Shukla, Professor, Virginia Tech, USA
- Jeanette Wing, Professor, CMU, USA
- Alexandar Wolf, Professor, Imperial College, UK
- Tao Xie, Associate Professor, UIUC, USA.
- *Abhik Roychoudhury, Associate Professor, NUS, Singapore*

One can verify this list from <http://dsp.acm.org/> As shown in the web-site, currently there are only 123 ACM Distinguished Speakers all over the world.

### Organization Committees / Chairing

I have been appointed to conference organization of major conferences, including the following. ICSE and RTSS are the flagship conferences in Software Engineering and Real-time Systems respectively. These are obviously tier-1 conferences. *Note that flagship conferences in Computer Science are extremely prestigious, peer-reviewed, highly competitive and often carry higher prestige than journals.*

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- Co-chair of New Ideas and Emerging Results (NIER) Track, International Conference on Software Engineering (ICSE) 2015. The NIER track invites new ideas which can shape the visions of the future, and is typically chaired by senior researchers in the software engineering research community.
- Co-chair of Mentoring Track, International Conference on Software Engineering (ICSE) 2014.
- Co-chair of Doctoral Symposium, ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE) 2014.
- Chair of Design and Verification Track, IEEE Real-time Systems Symposium (RTSS) 2012.
- Program Chair, International Colloquium on Theoretical Aspects of Computing (ICTAC) 2012.
- Co-chair of a thematic workshop “Future of Software Debugging”, February 2012. The workshop was held to specifically facilitate academia industry collaboration in the area, organized under the auspices of Infosys Technologies Ltd.

## Program Committee Membership

Apart from chairing the organization of conference/tracks, I have been a member of Program Committee of at least fifty (50) conferences and workshops. The conferences where I have most recently been a member of the Program Committee include the following (only a few recent ones are mentioned).

- RTSS – IEEE Real-time Systems Symposium – 2010, 2011, 2013.
- RTAS – IEEE Real-time Applications Symposium – 2014
- DATE – Design Automation and Test in Europe – 2012, 2014.
- FSE – ACM SIGSOFT Foundations of Software Engineering – 2012
- ISSTA – International Symposium on Software Testing and Analysis – 2013
- ASE – Automated Software Engineering – 2013.
- ATVA – Automated Technology for Verification and Analysis – 2012, 2013.
- LCTES – ACM SIGPLAN Symposium on Languages Compilers and Tools for Embedded Systems – 2012.
- ICST – International Conference on Software Testing – 2013, 2014.
- ICSE – International Conference on Software Engineering – 2014(NIER), 2009(Tools).
- Panelist in ISSTA 2013 Doctoral Symposium

RTSS, FSE, ICSE, ISSTA are tier-1 conferences, and DATE, ASE, RTAS are tier-2 conferences.

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## Other Service Contributions by Abhik Roychoudhury

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## Membership of International Agencies

I was an International Member of ArtistDesign, the European Network of Excellence in Embedded Systems, 2009-12. My technical roles were related to the Cluster on Software Synthesis, Code Generation and Timing Analysis. Information about me and other international invited members in this cluster of ArtistDesign is available from here

<http://www.artist-embedded.org/artist/Affiliated-Academic-International.html>

## Other Contributions to Industry / Local Community

(2013)

Invited speaker at Cognizant Quality Engineering and Assurance Summit, organized by Cognizant Singapore, March 6 2013.

(2009-2012)

Member of Selection Panel for Computing Alumni Assistance Award (CAAA) and Computing Student Development Fund (CSD), 2009. This Selection Panel gives out financial assistance to deserving undergraduate students for conference participation, and other enrichment activities.

(Feb - Mar 2009) (Research Project Evaluator (to decide funding of submitted research projects))  
(Singapore Israel Industrial Development Foundation (SIIRD))

(Feb 2009) (Co-organizer of Break-out Session on "Computer Systems")  
(Launch of Advanced Digital Sciences Center (ADSC) by University of Illinois and A\*STAR at Singapore)



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## **ANNEXURE**

The next page contains a letter of appreciation from NUS Vice Provost's office for my participation in the task-force leading to a new Graduate Admission System for the entire university. This system is being implemented by Computer Center, and will be rolled out for usage by the University's faculties in 2014.

11 September 2013

Assoc Professor Abhik Roychoudhury  
Vice Dean (Graduate Studies)  
School of Computing

Dear Abhik

**LETTER OF APPRECIATION**

I write to express our appreciation of your valuable contributions to the Graduate Admission System Task Force. Your efforts have been an important factor in the revamp of the current Graduate Admissions System.

I thank you for your time and commitment.

Yours sincerely



Professor Bernard Tan  
Vice Provost (Education)

cc Professor Mohan Kankanhalli, Associate Provost (Graduate Education)  
Professor David S Rosenblum, Dean, SOC