

An Internet Mediated PhD Program in Computer Science and Information Technology

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A 4-minutes video.

The Problem

Sudan: 28 public universities

> 26 private colleges and universities

Computer studies programs in all universities and colleges

Acute shortage of teaching and research staff in the field

PhD degree is a requirement for progress in academia

Scarcity of qualified PhD supervisors

Unaffordable Education abroad

Objectives

Enable lecturers in higher education institutions to obtain PhD in computer science and information technology.

In the country

Current research problems

Qualified supervisors

Affordable cost

Methodology

Sudan University of Science and Technology(SUST) introduced the program now in its 6th year

- administers the program and grants the degree

Cisco WebEX : an internet based conferencing system used for the lectures, seminars and meetings with supervisors; provides desktop and mobile implementations.

Examinations are conducted face to face in the traditional way at SUST.

Students

From all over the country

And from neighboring countries

**Have Master degree in computer science or
information technology**

**Must come to the university at least once a
year for exams, meeting supervisors,
progress seminars etc**

Table 1: Distribution of Students in SUST PhD Programme.

| | Year of Admission | | | | | | | | | | Total | |
|--------------|-------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | | |
| | M | F | M | F | M | F | M | F | M | F | M | F |
| Sudan | 8 | 8 | 9 | 11 | 19 | 10 | 28 | 15 | 16 | 21 | 80 | 65 |
| KSA | | | 4 | 9 | 1 | 7 | 2 | 15 | 5 | 14 | 12 | 45 |
| Jordan | | | | | | | | | | 1 | | 1 |
| Bahrain | | | | | | 1 | | | | | | 1 |
| UAE | | | | | | | 1 | | | | 1 | |
| Egypt | | | | 1 | | | | | | | | 1 |
| Chad | | | | | | | 1 | | | | 1 | |
| Nigeria | | | | | | | 1 | | | | 1 | |
| Total | 8 | 8 | 13 | 21 | 20 | 18 | 33 | 30 | 21 | 36 | 95 | 113 |

Professors

Professors are from universities all over the world.

At the beginning of the programme, they give seminars explaining their areas of expertise and the possible research opportunities.

Teach introductory courses in their own research areas.

Each professor supervises 4-5 students.

Scheduled meetings using the internet (WebEX) and at least one annual face to face meeting coordinated by SUST in Khartoum

Table 2: Distribution of Participating Professors by Country

| Intake Year | 2011 | 2012 | 2013 | 2014 | 2015 | Total |
|--------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Australia | 1 | 1 | 1 | 1 | 1 | 5 |
| Canada | | | | | 1 | 1 |
| Czeck | | | | | 1 | 1 |
| Egypt | | 1 | | 2 | 1 | 4 |
| France | | | | 1 | 1 | 2 |
| Germany | | | | 2 | | 2 |
| Italy | | | 1 | | 1 | 2 |
| Japan | 1 | | | | | 1 |
| Jordon | | | | 1 | | 1 |
| Malaysia | 1 | 2 | 1 | | | 4 |
| Portugal | | | | 1 | | 1 |
| South Africa | | | 1 | 1 | | 2 |
| Spain | | | | | 2 | 2 |
| Sudan | 1 | 1 | 1 | 1 | | 4 |
| Sweden | | | | 1 | | 1 |
| Tunis | | | 1 | | | 1 |
| Turkey | | 1 | | | | 1 |
| UK | | | 1 | 3 | 2 | 6 |
| USA | 1 | 2 | 2 | 1 | | 6 |
| Total | 5 | 8 | 9 | 15 | 10 | 47 |

Wide spectrum of specializations

Table 3: Distribution of the Current Research Areas

| Research Area | Supervisors | Research Area | Supervisors |
|---|-------------|---|-------------|
| Business Modeling | 1 | Intelligent Systems | 2 |
| Cloud Computing | 1 | Mobile Learning Technology | 1 |
| Communications | 1 | Mobile Networks | 1 |
| Data Mining | 2 | Natural Language Processing/Computation and Text Mining | 1 |
| Information Systems | 1 | Network Security | 2 |
| Data Warehousing | 1 | Performance Modeling | 1 |
| Digital Signal, Video, and Image Processing | 1 | Sensor Networks | 1 |
| e-Culture | 1 | Soft Computing | 2 |
| Fuzzy Logic | 1 | Software Engineering | 5 |
| Geoinformatics | 1 | Speech Analysis & Recognition | 3 |
| Information Retrieval and Data Mining | 1 | Vehicular Ad-hoc Networks | 1 |

Publications

Table 5: Research Publications of Students of SUST PhD Programme

| Publication Type | Year of Admission | | | | Total |
|---------------------------|-------------------|-----------|-----------|-----------|------------|
| | 2011 | 2012 | 2013 | 2014 | |
| Local/Regional Workshop | 3 | | | | 3 |
| Local/Regional Conference | 4 | 12 | 8 | 1 | 25 |
| International Workshop | 1 | | | | 1 |
| International Conference | 10 | 20 | | | 30 |
| Local Journal | | 2 | 8 | 3 | 13 |
| Regional Journal | | 8 | 6 | | 14 |
| International Journal | 4 | 42 | 26 | 12 | 84 |
| Total | 22 | 84 | 48 | 16 | 170 |

Problems

Weak internet in some rural areas

The program was originally designed to take three years. Many students are working. It typically takes four years.

Limited number of scholarships

The Way Forward

Funding participation of students in workshops and conferences.

Conduct studies, involving supervisors , on improving the performance of the students.

More involvement of Diaspora

Scholarships for students from neighboring countries

Cooperation with African and European universities to involve professors in availing post-doctorate research opportunities for the graduates of the program and other students from the region.

THANK YOU