



Makerere University

# Research Capacity and Challenges in Uganda

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# Outline

- ▶ **Universities in Uganda**
  - ▶ ICT Faculties and Departments
- ▶ **Research Capacity**
  - ▶ Makerere University
- ▶ **Challenges**

# Universities and ICT units in Uganda



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- ▶ **Universities**
  - ▶ 17 Accredited Universities
  - ▶ Majority are fairly recent (< 10 years old)
  - ▶ **Makerere is the oldest, since 1922**
- ▶ **ICT Faculties/Departments and offered ICT programs**
  - ▶ 14 in total
  - ▶ 10 offer maximum of BSc
  - ▶ 4 offer MSc, in addition
  - ▶ **3 offer all levels**
- ▶ **Makerere University (MAK)**
  - ▶ 2 ICT based Faculties, 1 School



# ICT Research Capacity

- ▶ **PhD holders**
- ▶ Graduate programs (MSc, **PhD**)
- ▶ ICT Departments in HE institutions/ research institutes
- ▶ Capacity building/enhancement initiatives
- ▶ External collaborations, Publications, Community outreach, etc

# ICT Research Capacity, **MAK**



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	<b>ICT based Departments</b>
Faculty of Computing and IT	Computer Science Networks Information Technology Information Systems
Faculty of Technology	Electrical and Electronics Eng.
School of Library and Information Sciences	Information Sciences



# ICT Research Capacity, **MAK**

## Faculty of Computing and IT

Departments	Graduate Programs	Existing (PhD) Capacity	Training (PhD) Capacity
Computer Science	PhD MSc	5	17
Networks	PhD MSc 3 Options	2	5
Information Technology	PhD MSc 4 Options	3	7
Information Systems	PhD MSc 4 Options	4	16
<b>Total</b>	<b>4 PhD 12 MSc</b>	<b>14</b>	<b>45</b>



# ICT Research Capacity, MAK

## Faculty of Computing and IT: Research Groups

### Department of Computer Science

1. ICT for Sustainable Development
2. ICT in Education
3. Intelligent System and Pattern Recognition
4. Language Technology for African Languages

- Coordination in multi-agent systems, service-oriented architectures.
- Statistical machine learning, pattern recognition
- Performance and complexity analysis
- *Computer vision*
- *Predicate logic, service computing*

### Department of Information Technology

1. E-Learning

### Department of Information Systems

1. ICT in Health
2. Informatics and Visualization



# ICT Research Capacity, MAK

## Faculty of Computing and IT: Research Groups

- Performance analysis, Protocols and Systems design,
  - Wireless Broadband Access Networks
  - Wireless Mesh Networks, Sensor Networks
  - Large scale Distributed Networks
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- Mobile and Wireless Communication Technology and Services
  - Next Generation Networks and Developing Regions (NGN-DR)
  - Regulatory & Policy Issues, Mobile Application Software Development

### Department of Networks

1. Networking Research Group
2. Mobile Computing and Communications

### Department of Information Technology

1. E-Learning

### Department of Information Systems

1. ICT in Health
2. Informatics and Visualization



# ICT Research Capacity, MAK

## Faculty of Computing and IT

### Research Collaborations

University of Groningen, NL

Radboud University, Nijmegen, NL

University Technology of Eindhoven, NL

**Computer Laboratory, Cambridge University**

Networking, Security, Computing for future of the planet, etc

### Publications

Number of publications for 2007/2008 = 61 papers (16 journals/45 conferences)

Bi annually International journal on ICT research (IJCIR)

A yearly International conference on Computing and ICT research, 3<sup>rd</sup>-6<sup>th</sup> August

### Private/Public Sector Initiatives

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# ICT Research Capacity, MAK

## Faculty of Technology

Departments	Graduate Programs	Existing (PhD) Capacity	Training (PhD) Capacity
Electrical and Electronics Eng.	1 PhD 2 MSc 1 MEng	4	-

## Research Areas

Signal Processing

Fiber Optic Communications

Wireless and Mobile Communications



# ICT Research Capacity, MAK

## School of East African Library and Information Science

Departments	Graduate Programs	Existing (PhD) Capacity	Training (PhD) Capacity
Information Sciences	1 PhD, 1 MSc	3	2

### Relevant Research Areas

Digital Libraries

Content and Information Management

Information Retrieval



# Research Challenges

- ▶ Lack of research culture
- ▶ *Lack of local catalyst, appreciation, and support*
- ▶ Lack of funding, equipments, etc
- ▶ *Lack of enough qualified researchers*
- ▶ *High Teaching/Supervision load*
  
- ▶ *Challenges in training new researchers*
- ▶ Graduate students are full time employees
  - ▶ Need for research funding to support full time students



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*Thank you!*



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# ICT Research Capacity, MAK

Faculty of Technology,  
Department of EE

## Research Areas

Signal Processing

Fiber Optic Communications

Wireless and Mobile Communications