RIPHAH INTERNATIONAL UNIVERSITY

Workshop on Supercomputing and Artificial Intelligence

16th December 2017

Dr. Tassadaq Hussain

Riphah International University
UCERD Pvt Ltd, Islamabad
Barcelona Supercomputing Center, Spain
University Valenciennes France

IEEE

UCERD Gathering Intellectuals www.ucerd.com

Education

- International **PhD BarcelonaTech Barcelona** 2014
  - Computer Architecture
  - High Performance System Design

Microsoft Research

- **Masters ISEP Paris** 2009
  - Electronics and Communication
  - Electronics for System

Infineon technologies

- B.Sc. (Electrical Engineering), RIU Islamabad 2005

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Experience

- **Riphah International University as** Assistant Professor
  - January 2015 to till date
- **Microsoft Barcelona supercomputing center**
  August 2009 – December 2014 www.bscmsrc.es
  - Worked closely with High Level Synthesis designers at **Ylichron technologies** (**PLDA Italia**) to develop Three-dimensional memory organization for stencil computation www.ylichron.it
  - Designed Programmable Memory Controller for Vector System on Chip **Microsoft Research Cambridge** **research.microsoft.com**
- **Infineon Technology** digital design department
  July 2008 to 31st March 2009 www.infineon.com
- **Pakistan Broadcasting Corporation** as Senior Broadcasting Engineer
  August 2005 to September 2007 www.radio.gov.pk
- **Center for Advanced Research in Engineering**
  August 2004 to August 2005 www.carepvtltd.com

Projects

- Design Ultra Low Cost Display Camera Interface for Mobile Baseband XGold Chip at **Infineon Technologies France.**
- Implementation of Reverse Time Migration on FGPAs at **PLDA Italia** and **REPSOL BSC Research Center.**
- Programmable Memory Controller for Vector System on Chip **Microsoft Research Cambridge.**
- Programmable Vector Memory Controller for **European ParaDIME research group at BSC.**
- **Low Power Low Cost Supercomputer Architecture for Undeveloped Countries** at **RIU Pakistan and BSC Spain.**
- **ViPS: Visual Processing Toolkit** at **UCERD Pakistan and BSC Spain.**

Research and Development

- Published 38 International Paper Publications
- 18 **Journals** 10 **Accepted** 8 Waiting for Reviews
- Completed **4 International** and **4 National Projects**
- **Filed 2 Patents …..**

Agenda of Workshop

- **High Performance Computing**
  - **Uni-core System**
  - **Multi-core System**
  - **Heterogeneous Multi-core System**
- **Applications and Programming Languages**
  - **Sequential Programming**
  - **Parallel Programming Models**
  - **Artificial Intelligence Frameworks**
- **Artificial Intelligence and Frameworks**
  - **Medical Applications**

Outcome of the course

1) **Introduction to Digital Electronics and High Performance Computing Technology**
2) **Programming Applications**
3) **Introduction to Supercomputing and Artificial Intelligence for real life problems**
4) **Tools and Techniques**
   - **Basic understanding of supercomputers, programming and scripting languages**
   - **Deep Learning Frameworks**
   - **Tools and Programming Models for Supercomputing**
   - **Accessing and Using Supercomputers**