



Progress

ICT – TRG 2016~17

Team Lead: Dr Sajjad A. Madani

Presented by Prof Dr Izhar Hussain





Flow of Presentation

1. Research Theme
2. Projects and Progress
3. Way Forward

Original Research Themes



Realigned research themes in the CCC meeting held in May 2016



- Realignment of the projects inline with the current trends and technology foresight
- Some identified as priority areas by commission on science and technology for development , UN



Big Data
and IoT



Cloud
Computing



e-Solutions



Cyber
Security





Projects around the themes 1 (Big Data and IoT)

- **National Center for Artificial Intelligence**
 - PC1 submitted to govt of Pakistan; PKR 1023.3 M
 - CIIT selected as the lead institute in a consortium of 4 universities after a competitive process
 - Focus on Data Science, IoT, Robotics, Image processing
 - Will provide high valued shared services to Academia & Industry; Develop advances work force in AI
 - 8 focused research labs; Unique GPU Cluster with more than 800 TeraFLOPS; 24 start ups expected
 - Focal Person : Dr Khalid Latif



Projects around the themes 2 (Cloud Computing)

- Innovation Network for connecting Pakistani researchers with industry
 - Funded by HEC
 - Worth PKR 9.02 million
 - State of the Arts Knowledge Management System
To collect, maintain, link and provide information about Industries problems and researchers/ resources available to solve these problems
 - After successful completion the project can be replicated in COMSATS member countries subject to legal formalities
 - Focal Person : Dr Khalid Latif



Projects around the themes 3 (e-Solutions)

- ICT4COP: leveraging ICTs for community policing
 - European commission based Horizon 2020 project with Norwegian Uni of life sciences as lead institute with partners from 8 different countries (Kosovo, Serbia, Kenya, Somalia, Sudan, Guatemala, Pakistan, Afghanistan)
 - To explore how technological innovations & creative communication can facilitate Police Citizens interactions for positive COP
 - Focal Person : Dr Sajjad A. Madani



Projects around the themes ₄ (Cyber Security)

- Machine Learning in Network Security
- T-Eye (threat intelligence platform) in collaboration with Trillium Information Security Systems
- SHEPERD (Cloud computing Security) in collaboration with WANClouds Inc. US
- And a few more project with TRIAM and IBM
- Focal Person : Dr Masoom Alam



Conferences/Workshops

- 15th Frontiers of Information Technology held on December 16~18, 2016 with them of IoTs
- Departmental symposium on Artificial Intelligence
- 16th Frontiers of Information Technology technically co-sponsored by IEEE Industrial electronics society and IEEE computer society planned for December 18~20, 2017 in Islamabad



Publications around the themes 1

1. Tahir Maqsood, Osman Khalid, Rizwana Irfan, Sajjad A. Madani, and Samee U. Khan. "Scalability Issues in Online Social Networks." **ACM Computing Surveys** (CSUR) 49, no. 2 (2016): 40.
2. Maqsood, Tahir, Kashif Bilal, and Sajjad A. Madani. "Congestion-aware core mapping for Network-on-Chip based systems using betweenness centrality." **Future Generation Computer Systems** (2016).
3. Tahir Maqsood, Kashif Bilal, and Sajjad A. Madani, "Energy and Communication Aware Task Mapping for MPSoCs". **Journal of Parallel and Distributed Computing**, 2017.
4. Tahir Maqsood, Nikos Tziritas, Thanasis Loukopoulos, Sajjad A. Madani, Samee U. Khan, and Cheng-Zhong Xu, "Leveraging on Deep Memory Hierarchies to Minimize Energy Consumption and Data Access Latency on Single-Chip Cloud Computers". **IEEE Transactions on Sustainable Computing**, 2017.
5. Faisal Rehman, Osman Khalid, and Sajjad A. Madani. "A comparative study of location-based recommendation systems." **The Knowledge Engineering Review** (2017): 1-30.



Publications around the themes 2

6. Bisma Sarfraz, Masoom Alam et al. "Formal Modeling and Verification of Security Controls for Multimedia Systems in the Cloud", **MULTIMEDIA TOOLS AND APPLICATIONS Springer Journal**.
7. Q.Alam, Saif M, Masoom Alam et al: A Cross Tenant Access Control (CTAC) Model for Cloud Computing: Formal Specification and Verification. **In IEEE Transaction on Information Security and Forensics**
8. Abid Khan, Masoom Alam et al: "A survey of cloud computing data integrity schemes: design challenges, taxonomy, and future trends" ,**Computer & Security Elsevier**
9. Anam Nazir, Masoom Alam et al: "A High-Level Domain-specific Language for SIEM: Design, Development and Formal Verification, **cluster computing**
Masoom Alam et al: Optimizing SIEM Throughput on the Cloud Using Parallelization In **PLOS ONE**
10. Q.Alam, Saif M, Masoom Alam, et al: Formal verification of the xDAuth Protocol. **In IEEE Transaction on Information Security and Forensics**



Way Forward

- Active Engagement of researchers from member countries. China is actively engaged already.
- Joint research projects and joint publications
- Establishment of center of excellence in cyber security
- Solicitation of focal persons from each member country to effectively organize the thematic area
- Meeting of the thematic area members in December subject to the provision of funds



Thank you for your attention!

Professor Dr Izhar Hussain.

For detailed queries please contact

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