

# Avinab Marahatta

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## Profile

To contribute outstanding technical skills and strong commitment to achieve notable research goals, I am seeking a position that utilizes my skills and abilities in the research field that offers security and professional growth while being resourceful, innovative and flexible.

## Current Position

2020.09-Present Post Doctoral Research Fellow and Special Research Assistant, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China.

## Research Interests

Sustainable Computing	Artificial Intelligence
High Performance Computing	Dynamic Scheduling
Fault Tolerance	Privacy and Security
Data Center Network	Edge and Cloud Computing

## Education

2016.09-2020.06	Ph.D. at University of Chinese Academy of Sciences in Institute of Computing Technology, Chinese Academy of Sciences, China.
Thesis	Energy-Efficient Task Scheduling for Cloud Data Center based on Task and Resource Classification
2012.08-2014.08	Master of Technology in Computer Science at Jawaharlal Nehru Technological University Hyderabad, India.
Thesis	Enhanced Intrusion Detection System with On-Demand Routing Protocol using Hybrid Cryptographic Technique for Mobile Adhoc Networks
2005.08-2010.03	Bachelor of Engineering in Computer Engineering at Purbanchal University, Nepal.
Thesis	One Man Branch Banking System

## Professional Experiences

2015.09-2016.09	IT Expert/ IT Consultant, National Examination Board, Ministry of Education, Government of Nepal.
2011.11-Present	Managing Director, Harness Solution Pvt. Ltd., Kathmandu, Nepal.
2011.05-2012.08	Computer Engineer, Higher Secondary Education Board, Ministry of Education, Government of Nepal.

## Awards and Achievements

2019	Excellent International Student Award 2019, University of Chinese Academy of Sciences, China.
2016 - 2020	CAS-TWAS President Fellowship.
Till 2002	Scholarship from primary to secondary level education.

## Project Involvement

Project Title	Efficient Data Center- Optimization, Organization and Scheduling of Data Center Resources
Grant Number	61520106005
Project Type	National Natural Science Foundation of China International Cooperation Project
Project Duration	January 2016- December 2020
Project Title	Key Technology and Equipment of Efficient Cloud Computing Data Center
Grant Number	2017yfb1010001
Project Type	National Key Research and Development Plan for Ministry of Science and Technology of the People's Republic of China
Project Duration	October 2017- September 2021
Project Title	Basic Theory and Key Technology of Edge Computing
Grant Number	61761136014
Project Type	Key International Cooperative Research Project of National Natural Science Foundation of China
Project Duration	January 2018- December 2020

## Academic Projects

EFDTS	Energy-aware Fault-tolerant Dynamic Task Scheduling
Year	2019
Technology used	CloudSim, Tensorflow, Java, CloudReport, Python
Project Summary	An energy-aware fault-tolerant dynamic task scheduling scheme (EFDTS) is developed to coordinately consider resource utilization, energy efficiency, and fault-tolerance in task assignment, scheduling, and migration processes, such that the problem of resource utilization and energy efficiency will be improved while the fault tolerance feature is provided.
EDS	Classification based Efficient Dynamic Scheduling
Year	2019
Technology used	CloudSim, Tensorflow, Java, CloudReport, Python
Project Summary	An energy-efficient dynamic scheduling scheme (EDS) of real-time tasks for virtualized cloud data center is developed. In the scheduling scheme, the heterogeneous tasks and virtual machines are first classified based on a historical scheduling record. Then, similar type of tasks are merged and scheduled to utilize an operational state of the host at maximum level. In addition, energy efficiencies and optimal operating frequencies of heterogeneous physical hosts are employed to attain energy preservation while creating and deleting the virtual machine.
PEFS	Prediction based Energy-aware Fault-tolerant Scheduling
Year	2019
Technology used	CloudSim, Tensorflow, Java, CloudReport, Python
Project Summary	A novel prediction based energy-aware fault-tolerant scheduling scheme (PEFS) is developed for cloud data center. In first stage, a prediction model based on machine learning approach is trained to classify the arriving tasks into “failure- prone task” and “non-failure-prone task” according to the predicted failure rate. Then, two efficient scheduling mechanisms are proposed to allocate two types of tasks to the most appropriate hosts in a cloud data center. Elegant vector reconstruction method is developed to construct super tasks from failure-prone tasks and schedule these super tasks and non-failure-prone tasks to most suitable physical host, separately.

EcoRS	Eco-friendly Regional Scheduling
Year	2020
Technology used	Python, Tensorflow
Project Summary	An eco-friendly dynamic task scheduling method based on power prediction and threshold based queuing model for regional data center to improve the quality of services (QOS), not merely should the traditional standards such as energy and cost be satisfied, but particular emphasis should be laid on some extended standards such as environmental footprint while maintaining service level agreement (SLA).

## Professional Projects

Title	National Examination Board Core Examination System
Role	IT Consultant/ IT Expert
Year	2016
Client	National Examination Board, Ministry of Education, Government of Nepal
Project Summary	A National Examination Board Core Examination System is developed and implemented in central and sectoral offices of National Examination Board (NEB) as per the requirement of Ministry of Education, Government of Nepal. This system is replaced 20 years old examination model of NEB. Now, the result processing and publishing of more than 1.5 million of students are becoming easy and fast. The old fashioned database system is migrated to new database system, and developed and then implemented all the necessary core examination applications for conducting and processing of results of school students.

Title	National Examination Board Automation System
Role	IT Consultant/ IT Expert
Year	2016
Client	National Examination Board, Ministry of Education, Government of Nepal
Project Summary	A National Examination Board Automation System is developed and implemented in central and sectoral offices of National Examination Board (NEB) as per the requirement of Ministry of Education, Government of Nepal. This system aims to help employees and consumers to accomplish day to day services and activities.

Title	Mid-Western University Management Information System
Role	Project Engineer
Year	2015
Client	National Examination Board, Ministry of Education, Government of Nepal
Project Summary	It is a university automation system. This project aimed to upgrade existing dBase based database system in all major department of the institution to a single web based application system. Major target areas included: Examination, Finance, HR, Resource, Affiliation, etc. For this one of nation's largest IT renovation project, I worked for the entire duration of development of Examination system as core developer. Further responsibilities included analysis, client communication, deployment, etc.

Title	Higher Secondary Education Board Automation System
Role	Computer Engineer
Year	2012
Client	Higher Secondary Education Board(HSEB), Ministry of Education, Government of Nepal.
Project Summary	A Higher Secondary Education Board Automation System is developed and implemented in central and sectoral offices of Higher Secondary Education Board as per the requirement of Government of Nepal and HSEB. This system is running with examination document printing, electronic billing, income management, both Nepali and English date, different user privilege, different reports as per the HSEB requirements like Transcript, Migration, Provisional, Supplementary, and different income reports based on head wise, date wise, branch wise, diagrammatic report for analysis (Crystal Report) and many more features.

## Professional Activities

- 2016 Member, Examination and Selection Committee for Computer Operator, National Examination Board, Ministry of Education, Government of Nepal.
- 2012 Member, Publication Committee, Ministry of Education, Government of Nepal.
- 2012 Member, Budget Committee, Higher Secondary Education Board, Ministry of Education, Government of Nepal.
- 2011 Member, Budget Committee, Higher Secondary Education Board, Ministry of Education, Government of Nepal.

## Professional Service: Reviewer

IEEE Transactions on Industrial Informatics  
IEEE Transactions on Cloud Computing  
Future Generation Computer System, Elsevier  
Cluster Computing, Springer  
Mobile Networks and Applications, Springer, etc.

## Professional Associations

Institute of Electrical and Electronics Engineers (IEEE)  
China Computer Federation (CCF)  
International Association of Engineers (IAENG)  
The Association for Computing Machinery (ACM)  
SigmaXi  
Nepal Engineering Association

## Media Profiles

LinkedIn <https://www.linkedin.com/in/avinab-marahatta/>  
Facebook <https://www.facebook.com/avizzz>  
Researchgate [https://www.researchgate.net/profile/Avinab\\_Marahatta](https://www.researchgate.net/profile/Avinab_Marahatta)  
Personal Page [www.avinab.net](http://www.avinab.net)

## Languages Known

Native	Nepali
Fluent	English, Hindi
Good	Urdu
Basic	Chinese

## Workshops and Trainings Attended

- High Performance Computing Conference, Inner Mongolia, China.
- The Machine Learning Conference (MLconf 2019), New York, USA.
- 9th International Green and Sustainable Computing Conference (IGSC 2018), Pittsburgh, USA.
- 14th International Symposium on Bioinformatics Research and Applications (ISBRA 2018), Beijing, China.
- The 2nd CCF Bioinformatics Conference (CBC 2017), China Computer Federation (CCF), Changsha, China.
- 2017 Winter School on Frontier and Interdisciplinary Science, Sanya, China.
- 2016 Winter School on Frontier and Interdisciplinary Science, Shenzhen, China.
- InfoSec 2014 National Conference on Information Security, Ministry of communication and information technology, Hyderabad, India.
- InfoSec 2013 Conference on Information Security for Pursuing Graduates and Faculty, Centre for development of advanced computing (C-DAC), Hyderabad, India.

## Scientific Publications

- **Avinab Marahatta**, Qin Xin, Fa Zhang and Zhiyong Liu, “PEFS: AI-driven Prediction based Energy-aware Fault-tolerant Scheduling Scheme for Cloud Data Center” IEEE Transactions on Sustainable Computing, 2020.
- Ji Kaixuan, Fa Zhang, Ce Chi, Penglei Song, Biyu Zhou, **Avinab Marahatta**, and Zhiyong Liu, “A Joint Energy Efficiency Optimization Scheme Based on Marginal Cost and Workload Prediction in Data Centers”, IGSC, 2020.
- Ce Chi, Fa Zhang, Ji Kaixuan, **Avinab Marahatta** and Zhiyong Liu, “Improving Energy Efficiency in Colocation Data Centers for Demand Response”, IGSC, 2020.
- **Avinab Marahatta**, Ce Chi, Kaixuan Ji, Fa Zhang, Carlos Juiz and Zhiyong Liu, “Eco-friendly Task Scheduling for Regional Data Center”, 1st International Workshop on Energy Efficiency at the Edge (WEEE), e-Energy, 2020.
- Kaixuan Ji, Ce Chi, **Avinab Marahatta**, Fa Zhang and Zhiyong Liu, ”Energy Efficient Scheduling Based on Marginal Cost and Task Grouping in Data Centers”, 8th International Workshop on Energy-Efficient Data Centres (E2DC2020), e-Energy, 2020.
- Ce Chi, Kaixuan Ji, **Avinab Marahatta**, Penglei Song, Fa Zhang and Zhiyong Liu , “Jointly Optimizing Task Scheduling and Cooling System for Data Center Energy Efficiency based on Multi-Agent Deep Reinforcement Learning”, 8th International Workshop on Energy-Efficient Data Centres (E2DC2020), e-Energy, 2020.
- Ce Chi, Kaixuan Ji, **Avinab Marahatta**, Fa Zhang, Youshi Wang and Zhiyong Liu, “An Energy Saving-Oriented Incentive Mechanism in Colocation Data Centers”, ICCCN, 2020.
- Ce Chi, Kaixuan Ji, **Avinab Marahatta**, Fa Zhang, Youshi Wang and Zhiyong Liu , “An Incentive Mechanism for Improving Energy Efficiency of Colocation Data Centers Based on Power Prediction” , ISCC, 2020.
- **Avinab Marahatta**, Ce Chi, Fa Zhang and Zhiyong Liu, “Energy-aware Fault-tolerant Scheduling Scheme based on Intelligent Prediction Model for Cloud Data Center” 9th International Green and Sustainable Computing Conference (IGSC), Pittsburgh, USA, 2018.
- **Avinab Marahatta**, Sandeep Pirbhulal, Fa Zhang, Reza M. Parizi, Kim-Kwang Raymond Choo and Zhiyong Liu, Classification based Energy Efficient Dynamic Task Scheduling Scheme for Virtualized Cloud Data Center, IEEE Transactions on Cloud Computing, 2018.
- Sumarga Kumar Sah Tyagi, Yiqing Zhou, Tian Lin, **Avinab Marahatta** and Jinglin Shi, ”Realization of a Computational efficient BBU cluster for Cloud RAN” Cluster Computing, Springer, March 2018.
- **Avinab Marahatta**, Youshi Wang, Fa Zhang, Arun Kumar Sangaiah, Sumarga Kumar Sah Tyagi and Zhiyong Liu, ”Energy-Aware Fault-Tolerant Dynamic Task Scheduling Scheme for Virtualized Cloud Data Centers”, Mobile Networks and Applications, Springer, 2018.
- **Avinab Marahatta** , “Enhanced Intrusion Detection System for MANETs”, LAP LAMBERT Academic Publishing, 2019.
- **Avinab Marahatta** and Suresh Babu Kare, “Enhanced Intrusion Detection System with On-Demand Routing Protocol using Hybrid Cryptographic Technique for MANETs”, IJSER, Volume 5, Issue 8, 2014.
- Venkata Naga Kiranmai Malladi, **Avinab Marahatta** and Suresh Babu Kare, “(t, n) Threshold Scheme to Enhance the Security of the Password Repository”, IJSR, Volume 3, Issue 8, 2014.

## Personal Details

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## References

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## Declaration

I hereby declare that all the above given information is true as per my knowledge.

(AVINAB MARAHATTA)

Date: 14/12/2020