Imran Riaz Hasrat

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Area of Expertise Intelligent MPC controller design, model identification, model checking, formal verification, heating control in buildings, energy flexibility, cost optimization

Skills **Uppaal Stratego, CTSM, C++, Python, Web Development, Ruby on Rails, PHP, Mysql**

Work Experience

11/2019 — Current
PhD Fellow, Dept. of Computer Science, Aalborg University, Denmark
I am part of Distributed, Embedded and Intelligent Systems research group. My research focuses on implementing formal methods and machine-learning-based tools to design PMC controllers for the cost optimization of residential heating control systems.

09/2017 — 10/2019
Lecturer, Dept. of Computer Science, The University of Lahore, Pakistan
I was teaching different courses in bachelor of computer science , e.g. Fundamentals of Programming, Object Oriented Programming, Database Systems and Theory of Automata. I have also supervised a few final-year projects.

01/2013 — 01/2015
Software Engineer, Goodlogics pvt Ltd, Lahore, Pakistan
My primary responsibilities were Skype meetings with national and international clients to collect software requirements, analyze all possible solutions, design and develop the software, and finally, its deployment. I created different websites using the Ruby on Rails framework. I also worked with various PHP frameworks, e.g. Open Cart, Prestashop and Magento.

09/2011 — 12/2012
Lecturer, Dept. of Mathematics, The Science Institute of Technology, Pakistan
My responsibility was to teach different mathematics courses offered in the Civil, Chemical and Electrical Technology departments.

Education

09/2013 — 04/2017
Master of Science in Computer Science(MSCS), *The University of Lahore, Pakistan*
Thesis: 'Formal Specification and Analysis of Termination Detection by Weight-throwing Protocol.'
Final Grade: 3.82/4.00 (excellent)

01/09/2015 — 31/07/2018
Bachelors of Science (Telecommunication Engineering), *FAST University, Islamabad, Pakistan*
Project: 'Soft Real Time Web Based Mobile Tracking System.'
Final Grade: 3.11/4.00 CGPA (good)

Supervision

Fall 2020, Spring 2021, Fall 2021
Group Project Supervisor for BS in Software Engineering and BS in computer science at **Aalborg University**
I have supervised eight groups (2nd and 3rd semester) with 6-7 students in each group. The projects targeted real-life problems to address the Problem Based Learning (PBL) approach. The list of the projects includes: 'Idea Bank for Aalborg Portland', 'Scheduling of Accounting Data in a Planning Tool', 'Development of an E-Commerce Website', 'Art By Me', 'Digital Socialization During COVID-19', 'Click and Collect System', 'Warehouse Optimization', and 'ØNSK Kaffe Online Shop and Management System'.

Achievements and Awards

2007
Outreach Scholarship Program
I got a full scholarship from the Ministry of Information and Technology Pakistan for my undergraduate studies at FAST University (2007 - 2011)

2017
Distinction in Masters
I got the first position in MSCS, The University of Lahore (2017)

Others

Languages
English, Urdu

Publications

2022 [1] 'End-to-End Heat-Pump Control Using Continuous Time Stochastic Modelling and UPPAAL STRATEGO', **Imran Riaz Hasrat**, Peter Gjøl Jensen, Kim Guldstrand Larsen and Jiří Srba, *In: International Symposium on Theoretical Aspects of Software Engineering, Proceedings, TASE 2022 363-380.*

2022 [2] 'Integration of flexibility potentials of district heating systems into electricity markets: A review', Hessam Golmohamadi, Kim Guldstrand Larsen, Peter Gjøl Jensen and **Imran Riaz Hasrat**, *In: Renewable and Sustainable Energy Reviews, 2022.*

2021 [3] 'Optimization of power-to-heat flexibility for residential buildings in response to day-ahead electricity price', Hessam Golmohamadi, Kim Guldstrand Larsen, Peter Gjøl Jensen and **Imran Riaz Hasrat**, *In: Energy and Buildings Journal, 2021.*

2021 [4] 'Hierarchical Flexibility Potentials of Residential Buildings with Responsive Heat Pumps: A Case Study of Denmark', Hessam Golmohamadi, Kim Guldstrand Larsen, Peter Gjøl Jensen and **Imran Riaz Hasrat**, *In: Journal of Building Engineering, 2021.*

2018 [5] 'Formal Specification and Analysis of Termination Detection by Weight-throwing Protocol', **Imran Riaz Hasrat**, Muhammad Atif and Muhammad Naeem, *In: International Journal of Advanced Computer Science and Applications, 2018.*

2018 [6] 'Formal Analysis and Verification of Agent-Oriented Supply-Chain Management', Muhammad Ahtisham Shoukat , Muhammad Atif, **Imran Riaz Hasrat** and Ijaz Ahmed, *In: International Journal of Advanced Computer Science and Applications, 2018.*