MARIAM KIRAN Ph.D. MSc(Eng) FHEA MACM MIEEE

CONTACT INFORMATION

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FHEA: Fellow of Higher Education
MACM: Member of ACM

EXPERTISE

Artificial intelligence for optimize computer infrastructure such as computer networks and distributed computing, Deep reinforcement learning/machine learning for classification, clustering and decision making with control engineering. Complex decision making such as agent-based models. Applications: high-performance network and distributed facilities.

EDUCATION

Sheffield University, Sheffield, UK
Ph.D., Computer Science **2011**
Thesis Topic: *Investigating the co-evolutionary algorithms in Agent-based Models*
Advisor: Professor Mike Holcombe
Area of Study: Agent-based modelling, Intelligent agents and computational economics

MSc (Eng), Advanced Software Engineering **2007**
Fretwell-Downing Prize: Comparative Analysis of Hypercomputational systems

Sheffield Hallam University, Sheffield, UK
PgCert, Learning and Teaching in Higher Education **2009**

RESEARCH AND WORK EXPERIENCE

Lawrence Berkeley National Lab – Energy Sciences Network **2016-Present**
Research Scientist
Bradford University – School of Computing Science **2014-2016**
Lecturer Software Eng.
Sheffield University – Computer Science **2013-2014**
Post-Doctoral Research Fellow
Leeds University – School of Computing, **2011-2012**
Post-Doctoral Research Fellow

SELECTED PUBLICATIONS

- **M Kiran,** C Wang, G Papadimitriou, A Mandal, E Deelman, Detecting anomalous packets in network transfers: investigations using PCA, autoencoder and isolation forest in TCP, Machine Learning, 1-17
- BM Ozyildirim, **M Kiran**, Do optimization methods in deep learning applications matter?. arXiv preprint arXiv:2002.12642
- G Papadimitriou, **M Kiran**, C Wang, A Mandal, E Deelman, Training Classifiers to Identify TCP Signatures in Scientific Workflows, 2019 IEEE/ACM Innovating the Network for Data-Intensive Science (INDIS), 61-68
- **M Kiran,** B Mohammed, N Krishnaswamy DeepRoute: Herding Elephant and Mice Flows with Reinforcement Learning2nd IFIP International Conference on Machine Learning for Networking (MLN'2019)
- F Alali, N Hanford, E Pouyoul, R Kettimuthu, **M Kiran**, B Mack-Crane, Calibers: A bandwidth calendaring paradigm for science workflows, Future Generation Computer Systems 89, 736-745
- **M Kiran**, A Chhabra, Understanding flows in high-speed scientific networks: A Netflow data study, Future Generation Computer Systems 94, 72-79

- B Mohammed, N Krishnaswamy, **M Kiran**, Multivariate Time-Series Prediction for Traffic in Large WAN Topology, 2019 ACM/IEEE Symposium on Architectures for Networking and Communications
- M Gribaudo, M Iacono, **M Kiran,** A performance modelling framework for lambda architecture-based applications, Future Generation Computer Systems 86, 1032-1041, 6, 2018
- **M Kiran,** E Pouyoul, A Mercian, B Tierney, C Guok, I Monga, Enabling intent to configure scientific networks for high performance demands, Future Generation Computer Systems 79, 205-214, 5, 2018
- A Mercian, **M Kiran,** E Pouyoul, B Tierney, I Monga, INDIRA: Application intent network assistant to configure SDN-based high performance scientific networks, Optical Fiber Communications Conference, 2017.s

SYNERGISTIC ACTIVITIES

Fellowship co-chair for N2Women for improving women researchers at Networking Conferences (2018-2020)
Editor for Special Issue at Springer Journal of Machine Learning 2019
Associate Editor, IEEE Networking Letters
Elected member of COMSES Network for OpenABM (agent-based modelling) at Arizona State University.
Developer for FLAME (Agent-based modelling framework) used World-wide in models
Programme Committee duties at SciPy2018-2019, SC17, ICML workshop 2018
Reviewer for proposals submitted to NSF and EU
Member of British computing society.
Member of ACM.
Member of Women in Engineering Society.
Instigated the ACM-Women professional chapter for UK

FUNDING TRACK RECORD

Title/Scheme	**Funding body**	**Amount**
DOE Early Career Autonomic and deep high performing networks (2017)	DOE ASCR	$2.5 million Early Career Fellowship
Reliability of Sensor Data and Business Cost models for IoT (PI) (2015)	Researcher in Residence Digital Catapult London	£ 25,000 Fellowship
Researchers in Westminster and Parliament Scheme (PI) (2014)	Royal Society London	Placement Fellowship
ACM-W Inspire 2015 event (Chapter President)	ACM-W, Microsoft and Industry sponsors	£ 6000
Researcher Participation SDN workshop with ONUG group (2014)	NSF	$10,000
ICT COST Action IC1406 High-Performance Modelling and Simulation for Big Data Applications (cHiPSet) (Co-I) (2014)	EU Cost Action	10,000 Euros

Business-Aware (Cost and Eco-Efficient) Big Data Management for Energy-usage Data over Cloud resources: A collaborative project with ESnet at LBNL (2014)	Visiting Research Grant, NEMODE (EPSRC)	£ 10,000
Find my Migraine (Co-I)	Sheffield Crucible Programme 2014	£10,000
Computer modelling of cancer resistance to chemotherapy (Co-I),	Sheffield Crucible Programme 2014	£10,000
Computer game for early detection of Parkinson's disease (Co-I)	Sheffield Crucible Programme 2014	£10,000
A Giant's bone: conveying scientific perspective of the human body to pre-school children (Co-I)	Sheffield Crucible Programme 2014	£10,000
Collaborative ethonography – Online resource pack for postgraduate students (Co-I)	Sheffield Methods Institute	£2000
Investigation Models of Bitcoin and its Risks (PI)	NEMODE (EPSRC) Research Grant	£3000
Smart Citizen Engagement (Co-I)	ESRC	£50,000
Smart City Index (Co-I) (GSMA, Imperial College London, Sheffield University)	NEMODE (EPSRC) Research Grant	£10,000
Market Analysis for Smart City (Co-I) (GSMA, Sheffield University)	GSMA Industry Grant	£20,000
Paper Presented at AAMAS 2010, Toronto, Canada	Royal Academy of Engineering Travel grant	£1000
Fully Funded PhD Scholarship at Sheffield University	Distinction Scheme and EU project EURACE	PhD Scholarship

PROFESSIONAL MEMBERSHIPS AND OTHERS APPOINTMENTS

- Fellow of Higher Education.
- Member of British computing society.
- Member of ACM.
- STEM Ambassador for schools in Yorkshire.
- Member of Women in Engineering Society.
- Instigated the ACM-Women professional chapter for UK – Currently Chair (president)
- Member of Athena Swan representing post-docs and minority issues on the departmental boards at Sheffield.
- Member of ACM Student Bradford Chapter – Faculty sponsor.

AWARDS

- DOE ASCR Early Career Award 2017
- Royal Society Award for Researcher in Residence at Westminster (UK Parliament) 2016
- Fully funded PhD Award 2007-2011
- Fretwell-Downing Prize for Best MSc Dissertation in Engineering, 2007

SELECTED INVITED TALKS

- Time-series Analysis of ESnet Network Traffic: Statistical and Deep Learning models, NERSC Data Seminars,
- M Kiran, A Mandal, G Papadimitriu, C Wang, E Deelman, Debugging Bad Performance in Huge Infrastructure: Using ML and AI (Presentation), Large Scale Networking (LSN) Workshop on Huge Data: A Computing, Networking and Distributed Systems Perspective
- EVIAN: tool to enable intents to be deployed on network links, EPOC - Engagement Performance Operations Center
- Nov 2017: Classifying Elephant and Mice flows, INDIS workshop, SC17
- Machine learning research in WAN systems, Internet2 Tech Exchange, Aug 2017, San Francisco, US
- Intent driven Networks: INDIRA, GEANT Conference, Apr 2017, Linz, Austria
- iNDIRA Demo (SC16), INDIRA for intent-based networking SC Conference, Nov 2016, Salt Lake City,

CURRENT COLLABORATORS AND CO-EDITORS

R. Kettimuthu (ANL), N. Rao (ORNL), P. Jamshidi (U. Southern Carolina), D. Ghosal (UC Davis), M. Veeraraghava (UVa), G. Papadimitriou (USC-ISI), F. Alali (UVa), E. Deelman (USC), A. Mandal (RENCI), P. Ruth (RENCI), I. Monga (LBNL), E. Pouyoul (LBNL), B. Mohammed (LBNL), K. Wu (LBNL), A. Sim (LBNL), Y. Kumar (LBNL), T. Lehman (Maryland), X. Yang (LBNL), C. Guok (LBNL), P. Balaprakash (ANL), T. Mallick (ANL), J. Mueller (LBNL), N. Hanford (UC Davis), M. Ozyildirim (Apple), B. Tierney, Q. Du (LBNL), S. Touzani (LBNL)

GRADUATE AND POST-DOCTORAL ADVISORS/ ADVISEES

PhD Advisor: Professor Mike Holcombe (University of Sheffield), Postdoc advisors: Tony Simons (University of Sheffield), Karim Djemami (University of Leeds)

GRADUATE STUDENTS ADVISED

B. Mohammed (University of Bradford, UK), K. Maiyama (University of Bradford, UK)

POST-DOCTORAL SCHOLARS SPONSORED

B. Mohammed (LBNL)