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## RESEARCH INTERESTS

Broad Computer systems and the interaction between software and hardware  
Current Focus Computer architecture – cache and memory subsystems

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## EDUCATION

Oct. 2014 – Mar. 2020 **Doctor of Philosophy**, Informatics, The University of Edinburgh  
Edinburgh, UK Thesis: “*Addressing Variability in Reuse Prediction for Last-Level Caches*”  
Advisor: Prof. Boris Grot

Jul. 2008 – Jun. 2010 **Master of Technology**, Computer Science and Engineering, IIT Kanpur  
Kanpur, India Thesis: “*CUDA-LF: A Lock-Free Data Structure Library for GPGPU*”  
Advisor: Prof. Mainak Chaudhuri  
CGPA: 10/10

Jul. 2004 – May 2008 **Bachelor of Technology**, Computer Engineering, Nirma University  
Ahmedabad, India CGPA: 8.39/10

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## PEER-REVIEWED CONFERENCE PUBLICATIONS

HPCA 2020 “*Domain-Specialized Cache Management for Graph Analytics*”  
**P. Faldu**, J. Diamond, and B. Grot  
In Proceedings of the 26<sup>th</sup> International Symposium on High-Performance Computer Architecture.

IISWC 2019 “*A Closer Look at Lightweight Graph Reordering*”  
**P. Faldu**, J. Diamond, and B. Grot  
In Proceedings of the International Symposium on Workload Characterization.

PACT 2017 “*Leeway: Addressing Variability in Dead-Block Prediction for Last-Level Caches*”  
**P. Faldu**, and B. Grot  
In Proceedings of the 26<sup>th</sup> International Conference on Parallel Architectures and Compilation Techniques.

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## PEER-REVIEWED WORKSHOP PUBLICATIONS

PACT 2019 “*POSTER: Domain-Specialized Cache Management for Graph Analytics*”  
**P. Faldu**, J. Diamond, and B. Grot  
In Proceedings of the 28<sup>th</sup> International Conference on Parallel Architectures and Compilation Techniques.  
**Awarded first place in the ACM Student Research Competition (SRC).**

CRC 2017 “*Reuse-Aware Management for Last-Level Caches*”  
**P. Faldu**, and B. Grot  
In 2<sup>nd</sup> International Cache Replacement Championship Workshop, co-located with ISCA.

WDDD 2016 “*LLC Dead Block Prediction Considered Not Useful*”  
**P. Faldu**, and B. Grot  
In 13<sup>th</sup> International Workshop on Duplicating, Deconstructing and Debunking, co-located with ISCA.

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## PATENTS

- May 2018 “Cache Memory Architecture and Policies for Accelerating Graph Algorithms”  
**P. Faldu**, J. Diamond, and A. Patel  
ID: US20180129613A1  
Assignee: Oracle International Corporation
- Jan. 2016 “Parallelization Method and Electronic Device Based on Profiling Information”  
J. Koh, A. Oberoi, G. P. Sharma, R. Velappan, **P. Faldu**  
ID: US20160004570A1  
Assignee: Samsung Electronics Co., Ltd.

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## GRANTS

- 2017 “Efficient Scale-Up Graph Processing on Future Memory Systems”  
**Oracle ERO Award**: Co-authored the grant proposal with Prof. Boris Grot (sole PI).  
Award: \$76,000

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## PROFESSIONAL SERVICES

- 2019 **Journal Reviewer**: IEEE Computer Architecture Letters (CAL)
- 2018 **Organizing Committee Member**: Web co-chair of the International Symposium on Computer Architecture (ISCA)

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## WORK EXPERIENCE

- May 2016 – Sep. 2016 **Oracle Labs**, Research Intern  
Austin, USA Part of the Performance Modeling, Simulation, and Optimization team. I worked on designing high-performance mechanisms and policies for managing the last-level caches to accelerate graph-analytic applications, which materialized into a successful patent.
- Jul. 2013 – Aug. 2014 **Samsung R&D Institute India**, Lead Engineer  
Bangalore, India Part of the Android Graphics team responsible for exploring the opportunities for accelerating multimedia applications on the company’s flagship Galaxy devices using OpenCL. We ported two multimedia applications on GPUs, reducing the application runtime over their highly optimized CPU implementations.
- May 2011 – Jul. 2013 **Intel Technology India Pvt. Ltd.**, Graphics Hardware Engineer  
Bangalore, India Part of the path-finding team responsible for proposing new features and analyzing feasibility of the proposed features for future generation integrated-GPU architectures. I worked on the development of various tools to facilitate the workload characterization studies.
- Jul. 2010 – Mar. 2011 **Google India Pvt. Ltd.**, Software Engineer  
Bangalore, India Part of the Google Map Maker product team. I worked on the development of various UI features and a module to analyze user-engagement.

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## ACADEMIC ACHIEVEMENTS

- 2019 Awarded first place in the *ACM Student Research Competition (SRC)* at PACT conference for our work on a hardware/software co-design to accelerate graph analytics.
- 2008–09 Received *Academic Excellence Award* at IIT Kanpur.
- 2008–10 Topper of the M. Tech. batch at IIT Kanpur.
- 2008 All India Rank 263 (of 18224 candidates) in *Graduate Aptitude Test in Engineering (GATE)* for the Computer Science discipline.

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## INVITED TALKS

- Sep. 2019 “*Software-Hardware Co-Design to Improve Cache Locality for Graph Analytics*”  
Invited talk at Georgia Institute of Technology, Atlanta, USA.
- Sep. 2019 “*Caching In on the Skew in Graph Analytics*”  
Invited talk at AMD Research, Austin, USA.
- Mar. 2018 “*Challenges in Scaling Up Graph Analytics*”  
Invited talk at 3<sup>rd</sup> UK System Research Challenges Workshop, Northumberland, UK.

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## TEACHING EXPERIENCE

- Tutor**, The University of Edinburgh  
Fall 2017, Spring 2018 *Introduction to Computer Systems* by Prof. Boris Grot  
Spring 2015 *Computer Architecture* by Prof. Vijay Nagarajan & Prof. Boris Grot
- Teaching Assistant**, The University of Edinburgh  
Spring 2019 *Operating Systems* by Prof. Michael O’Boyle  
Spring 2017 *Parallel Architectures* by Prof. Vijay Nagarajan  
Fall 2015, 2016 *Introduction to Computer Systems* by Prof. Boris Grot
- Tutor**, IIT Kanpur  
Spring 2010 *Fundamentals of Computing* by Prof. Manindra Agrawal
- Teaching Assistant**, IIT Kanpur  
Fall 2009 *Operating Systems* by Prof. Mainak Chaudhuri  
Fall 2008 *Fundamentals of Computing* by Prof. Surender Baswana

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## MENTORING EXPERIENCE

- Honours Project**, The University of Edinburgh  
Sep. 2017 – Apr. 2018 Elitsa Bankova, The University of Edinburgh, UK  
Sep. 2016 – Mar. 2017 Keith Donaldson, The University of Edinburgh, UK
- Research Internship**, The University of Edinburgh  
Jul. 2018 – Aug. 2018 Kuntai Du, Peking University, China  
Jun. 2018 – Nov. 2018 Adam McCabe, The University of Edinburgh, UK  
Jul. 2017 – Jan. 2018 Pramod Chunduri, IIT Kanpur, India
- Industry Internship**, Samsung R&D Institute India  
May 2014 – Jul. 2014 Rajat Sinha, IIT Guwahati, India
- Industry Internship**, Intel Technology India Pvt. Ltd.  
Jun. 2012 – Apr. 2013 Shruti Pavagadhi, Nirma University, India  
May 2011 – May 2012 Akhila Surishetti, NIT Warangal, India