Nikhil D. Hegde

206 Airport Road, Apt 2,
West Lafayette, IN-47906.

nikhil.hegde@gmail.com
765-532-2980

RESEARCH INTERESTS

I am interested in the areas of parallel and distributed computing, and programming languages. Specifically, I am interested in developing techniques to bridge the gap between performance and ease of programming of irregular applications on heterogeneous systems.

EDUCATION

Ph.D	Electrical and Computer Engineering, **Purdue University**, West Lafayette, USA *Thesis: Distributed Execution of Recursive Irregular Applications* Advisor: Prof. Milind Kulkarni	8/2019 (expected)
M.Tech	Computer Science and Engineering, **Indian Institute of Technology**, Madras, India *Thesis: Mobility Management and the Role of Mobile Node in Meghadoot Architecture* Advisor: Prof. C. Siva Ram Murthy	2005
B.E	Computer Science and Engineering, **B.M.S.College of Engineering**, Bangalore, India	2002

POSITIONS SUMMARY

Teaching Assistant	**Purdue University**, West Lafayette, USA	2019 – present
Research Assistant	**Purdue University**, West Lafayette, USA	2017 – 2018
Summer Intern	Technology Manufacturing Group, AQS, **Intel Corp.**, Hillsboro, USA	2017
Research Assistant	**Purdue University**, West Lafayette, USA	2014 – 2017
Teaching Assistant	**Purdue University**, West Lafayette, USA	2013 – 2014
Senior Engineer	Mobile Communications Group, **Intel India Pvt. Ltd.**, Bangalore	2012 – 2013
Senior Engineer	Symbian Technology Group, **Nokia India Pvt. Ltd.**, Bangalore	2010 – 2012
Senior Engineer	**AdsFLO India Pvt. Ltd.**, Bangalore	2007 – 2010
Software Engineer – II	HPC Connectivity Group, **STMicroelectronics India Pvt. Ltd.**, Greater Noida	2005 – 2007
Software Engineer	**Infosys Technologies Ltd.**, Bangalore	2002 – 2003

PUBLICATIONS

CONFERENCES

- **Nikhil Hegde,** Qifan Chang, and Milind Kulkarni. 2019. D2P: From Recursive Formulations to Distributed-Memory Codes. Submitted.
- **Nikhil Hegde**, Jianqiao Liu, and Milind Kulkarni. 2017. SPIRIT: A Framework for Creating Distributed Recursive Tree Applications. In *Proceedings of the International Conference on Supercomputing (ICS'17)*. ACM, New York, NY, USA, Article 3, 11 pages. https://doi.org/10.1145/3079079.3079095 Acceptance rate: 16%.
- **Nikhil Hegde**, Jianqiao Liu, Kirshanthan Sundararajah, and Milind Kulkarni. 2017. Treelogy: A benchmark suite for tree traversals. In *2017 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)*. 227-238. https://doi.org/10.1109/ISPASS.2017.7975294 Acceptance rate: 30%.
- Jianqiao Liu, **Nikhil Hegde**, and Milind Kulkarni. 2016. Hybrid CPUGPU Scheduling and Execution of Tree Traversals. In *Proceedings of the 2016 International Conference on Supercomputing (ICS'16)*. ACM, New York, NY, USA, Article 2, 12 pages. https://doi.org/10.1145/2925426.2926261 Acceptance rate: 24%.

- K. Balaji, **N. Hegde**, B. V. Ramana, B. S. Manoj, and C. S. R. Murthy. 2005. Performance evaluation of a hybrid wireless network architecture for rural communication. In *2005 IEEE International Conference on Personal Wireless Communications, 2005. ICPWC 2005.* 212-216. https://doi.org/10.1109/ICPWC.2005.1431334
- **N. Hegde**, K. Balaji, B. V. Ramana, B. S. Manoj, and C. S. R. Murthy. 2005. Implementation and Performance Evaluation of a Hybrid Wireless Network Architecture for Rural Communication. In *Proceedings of the Eleventh National Conference on Communications: NCC-2005*. ISBN: 8177647350 9788177647358

TECHNICAL REPORTS

- **Nikhil Hegde,** Qifan Chang, and Milind Kulkarni. 2018. *D2P: Automatically generating distributed dynamic programming codes*. School of Electrical and Computer Engineering Technical Report TR-ECE-18-09. Purdue University, West Lafayette, IN, USA. https://docs.lib.purdue.edu/ecetr/492

AWARDS AND GRANTS

- "D2P: A framework for code generation and distributed-memory parallelization of dynamic programming algorithms". Allocation Manager (PI: Milind Kulkarni). *XSEDE Startup Grant TG-ASC170007, 11/2018 - 11/2019*
- NSF travel grant to attend ISPASS, Santa Rosa, CA. 2017
- NSF travel grant to attend IISWC, Providence, RI. 2016

TALKS AND PRESENTATIONS

- SPIRIT: A runtime system for distributed irregular tree applications
  International Conference on Supercomputing (ICS), Chicago 2017
- Treelogy: a benchmark suite for tree traversal applications
  IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), Santa Rosa 2017
- Implementation and Performance Evaluation of a Hybrid Wireless Network Architecture for Rural Communication
  National Conference on Communications (NCC), IIT Kharagpur, India 2005

POSTERS

- SPIRIT: A runtime system for distributed irregular tree applications
  Principles and Practice of Parallel Programming (PPoPP), Barcelona 2016
- Treelogy: a benchmark suite for tree traversal applications
  IEEE International Symposium on Workload Characterization (IISWC), Providence 2016

TEACHING EXPERIENCE

Teaching Assistant	Electrical and Computer Engineering, **Purdue University**	
	Introduction to Data Science (ECE29595)	1/2019 – present
	Introduction to ASIC Design (ECE337)	8/2013 – 5/2014
Lab Assistant	Computer Science and Engineering, **Indian Institute of Technology, Madras**	8/2004 – 4/2005
	Paradigms of Programming (CS3100)	
	Introduction to Computer Science and Engineering (CS1300)	

SOFTWARE CREATED

- **SPIRIT and Treelogy - https://bitbucket.org/plcl/treelogy**

OTHER PROJECTS

- WaSP: Ensemble-based Warm-Starting Parameter Initialization for Training of Neural Network Models (Purdue University, Research project, 2/2016).
- A compiler for the LITTLE programming language (Purdue University, ECE573 project, 12/2013).

PROFESSIONAL EXPERIENCE

Intern **Advanced Quality Systems, MTD, Intel Corp.,** Hillsboro, USA 5/2017 – 8/2017

- Built predictive models using machine learning techniques to accurately predict yield and quality in Intel's chip manufacturing lines

Senior Engineer **Mobile Communications Group, Intel India Pvt. Ltd.**, Bangalore 7/2012 – 8/2013

- *Development, and integration of GPS receiver software modules on cellular platform.*
  Designed and developed modules to support different positioning protocols: OTDOA, Assisted-GPS (AGPS), Network-based, and LTE Positioning Protocol.

Senior Engineer **Nokia India Pvt. Ltd.**, Bangalore 6/2010 – 6/2012

- *Creation of hardware adaptation and OS layer for GPS receiver chips used in Nokia smartphones.*
  Ported I2C driver for SMP compliance, improved Symbian OS scheduler, developed location services protocols (RRLP, RRC, SUPLV1.0) and tested for GCF and PTCRB compliance, developed modules to support Assisted-GPS and network-based positioning technologies**.**
- *Creation of robust authentication methods for Mobile Device Management (DM)*
  Developed modules to support mutual-authentication of mobile device and DM server.

Senior Engineer **AdsFLO India Pvt. Ltd.**, Bangalore 10/2007 – 5/2010

- *Creation of targeted mobile advertising solutions for iOS, WinCE, Symbian based smartphones, and DVB-H based devices.*
  Supported demonstration of the product at MWC (2007 – 2009), and CES (2008 – 2009), developed Ad-scheduling algorithms to ensure fairness, optimize fill rate, and minimize Ad fatigue, developed Electronic Service Guide (ESG), and applied basic image-processing and error-correction algorithms.
- *Recruitment for the mobile devices team*
  Conducted technical interviews and mentored new employees

Software Engineer – II **STMicroelectronics India Pvt. Ltd.**, Greater Noida 7/2005 – 10/2007

- *Design and development of link-layer software for the DVB-H receiver chip.*
  Modeled memory controller, Reed-Solomon encoder, and DVB-H traffic decoder in software. Performed link layer validation of DVB-H IP on FPGA, Implemented drivers for taped-out chip.

Software Engineer **Infosys Technologies Ltd.**, Bangalore 12/2002 – 7/2003

- Tested MPLS enabled network switches.

SKILLS

Programming: C, C++, Symbian C++, Objective C, Perl, Python, Shell, OpenGL-ES, Linux Kernel, MPI, OpenMP, Pthreads, Boost Graph Libraries.
Debuggers: Lauterbach, Trace-32, Fastrace, ARM extended debugger (AXD), Multi-ICE, gdb.
Others: Spirent ULTS, Cadence SimVision, WireShark Network Traffic Analyzer, OpenSSL, JBoss, and Tomcat, LaTeX.
Versioning and Quality: Rational tool chain, SVN, CVS, Git, Bugzilla.