

S. VenkataKeerthy

Google PhD Fellow (2021) \diamond Doctoral Candidate \diamond IIT Hyderabad
cs17m20p100001@iith.ac.in

EDUCATION

Indian Institute of Technology Hyderabad

MTech + PhD (Dual Degree) in Computer Science and Engineering
Joined as MTech (RA) in August 2017, started PhD in May 2020

CGPA: 10/10

SASTRA University, Tamil Nadu

B.Tech in Information Technology

2012 - 2016

CGPA: 8.71/10

RESEARCH/WORK EXPERIENCE

The University of Tokyo, Tokyo

Research Intern

June 2018 - July 2018

Symantec Software and Services India Pvt. Ltd, Chennai

Associate Software Engineer

January 2016 - July 2017

Defence Research and Development Laboratory, Hyderabad

Intern

May 2015 - June 2015

TECHNICAL STRENGTHS

Programming Languages

C, C++, Java, Python

Technical Knowledge

LLVM, Clang, Linux, GDB, Steganography

Others

Git, L^AT_EX

PUBLICATIONS

S. VenkataKeerthy, S. Jain, U. Kalvakuntla, P. S. Gorantla, R. S. Chitale, E. Brevdo, A. Cohen, M. Trofin, R. Upadrasta, “*The Next 700 ML-Enabled Compiler Optimizations*”, International Conference on Compiler Construction (2024) [[LINK](#)]

S. VenkataKeerthy, Y. Andaluri, S. Dey, S. Banerjee, R. Upadrasta, “*VEXIR2Vec: An Architecture-Neutral Embedding Framework for Binary Similarity*”, Preprint - arXiv (2023) [[LINK](#)]

S. VenkataKeerthy, S. Jain, A. Kundu, R. Aggarwal, A. Cohen, R. Upadrasta, “*RL4ReAl: Reinforcement Learning for Register Allocation*”, International Conference on Compiler Construction (2023) [[LINK](#)]

S. Jain, S. VenkataKeerthy, R. Aggarwal, TK. Dangeti, D. Das, R. Upadrasta, “*Reinforcement Learning assisted Loop Distribution for Locality and Vectorization*”, LLVM-HPC workshop in International Conference for High Performance Computing, Networking, Storage, and Analysis (2022) [[LINK](#)]

S. Jain, Y. Andaluri, S. VenkataKeerthy, R. Upadrasta, “*POSET-RL: Phase ordering for Optimizing Size and Execution Time using Reinforcement Learning*”, International Symposium on Performance Analysis of Systems and Software (2022) [[LINK](#)]

S. VenkataKeerthy, Y. Andaluri, S. Dey, R. Shah, P. Tammana, R. Upadrasta, “*Packet Processing Algorithm Identification using Program Embeddings*”, Asia-Pacific Workshop on Networking (2022) [[LINK](#)]

S. VenkataKeerthy, R. Aggarwal, S. Jain, M. S. Desarkar, R. Upadrasta, Y. N. Srikant, “*IR2Vec: LLVM IR based Scalable Program Embeddings*”, ACM Trans. Archit. Code Optim. 17 (2020) [[LINK](#)]

B. Karthikeyan, S. VenkataKeerthy, G. Hariharan, “*Secure Gray code based reversible data hiding scheme in radiographic images*”, International Journal of Electronic Security and Digital Forensics (2019) [[LINK](#)]

T. K. Dangeti, S. VenkataKeerthy, R. Upadrasta, “*P4LLVM: An LLVM Based P4 Compiler*”, P4WE workshop in International Conference on Network Protocols (ICNP) (2018) [[LINK](#)]

M. S. Jamal, S. VenkataKeerthy, H. Ochiai, H. Esaki, K. Kataoka, “*INSTRUCT: A Clustering Based Identification of Valid Communications in IoT Networks*”, International Conference on Internet of Things: Systems, Management and Security (IoTSMS) (2018) [[LINK](#)]

S. VenkataKeerthy, Rhishi Kishore, B. Karthikeyan, V. Vaithiyathan, Anishin Raj, “*A hybrid technique for quadrant based data hiding using huffman coding*”, International Conference on Innovations in Information, Embedded and Communication Systems (2015) [[LINK](#)]

TALKS AND TUTORIALS

Talk on *Experiments on different ML-Compiler Communication approaches*, in ML-Guided Compiler Optimization Workshop, LLVM Developers’ Meeting, October 2023. [[Slides](#)]

Talk on *RL4ReAl: On using Reinforcement Learning for Register Allocation*

- CSE Seminar series, IIT Hyderabad, August 2023.
- LLVM Performance Workshop, Co-located with International Symposium on Code Generation and Optimization (CGO), February 2023. [[Slides](#)]

ML-LLVM-Tools: Towards Seamless Integration of Machine Learning in Compiler Optimizations, Technical Talk, Euro LLVM Developers’ Meeting, May 2023. [[Slides](#)] [[Video](#)] [[Blog](#)]

Presentation on “*GeMS: Generating Millions of SCoPs*”, in International Workshop on Polyhedral Compilation Techniques (Co-authored with N. Shah, A. Kundu, S. Jain, R. Upadrasta), January 2023. [[Slides](#)]

Part of the Panel discussion on *Machine Learning Guided Optimizations (MLGO) in LLVM*, LLVM Developers’ Meeting, November 2022.

Talk on *ML4Code: When Machine Learning meets Source Code*, in CSE Seminar series, IIT Hyderabad, June 2022.

Tutorial on *writing passes in LLVM*, ACM India Summer School on Programming Language Analysis and Optimizations, July 2021.

Talk on/related to *IR2Vec: LLVM IR based Scalable Program Embeddings*

- LLVM Social Bangalore, September 2022. [[Video](#)]
- European Network on High-performance Embedded Architecture and Compilation (HiPEAC) ([Paper track](#)), January 2021.
- Recent Highlights in Programming Languages Workshop, Co-located with Foundations of Software Technology and Theoretical Computer Science (FSTTCS) ([Technical talk](#)), December 2020.
- ACM IITH Student Chapter, December 2020.

AWARDS & ACHIEVEMENTS

Google PhD Fellowship - 2021

Under the category of Software Systems.

Prime Minister's Research Fellowship - 2021 (Declined)

Finalist, Qualcomm Innovation Fellowship - 2020

One of the 29 finalist teams.

Academic Excellence award, IIT Hyderabad - 2019

For ranking first in the department, among MTech CSE in 2017 - 2018.

Research Appreciation award, IIT Hyderabad - 2019

For contributing to research which lead to publications in 2017 - 2018.

Dean's Merit Scholarship, SASTRA University - 2014, 2015, 2016

For ranking among Top 2% (2014) and 10% (2015, 2016) in the university, among all streams.

Department Rank - UnderGraduate study

Second - overall, First - 3rd, 4th, 7th and 8th semesters.

Hostel Scholarship, SASTRA University - 2013, 2014, 2015

For academic performance and attendance.

Travel Grants - CGO (2023, 2024), Google Research Week (2023, 2024), EuroLLVM (2023), ICNP (2018)

RELEVANT COURSES AT IIT HYDERABAD

- CS5370 Deep Learning for Vision (A)
- CS6843 Compilers for Machine Learning (A+)
- EE5601 Representation Learning (A)
- CS6370 Information Retrieval (A+)
- CS6300 Topics in Compiler Optimizations (A+)
- CS6250 Compiler Optimizations (A)
- CS5360 Advanced Computer Architecture (A)
- CS6383 Introduction to Compiler Engineering (A)

POSITIONS OF RESPONSIBILITY

Teaching Assistant

2018–2023

Compilers I & II, Introduction to Compiler Engineering, Advanced Compiler Optimizations, Topics in Compiler Optimizations and Principles of Programming Languages

Duties involved delivering lectures, mentoring students on the course projects and grading assignments/exams.

SCANIT, Department of Information Technology

June 2014 - November 2015

Executive Member

SASTRA University

- Duties involved organizing technical events and fests.

Anukul Shiksha Kendra

June 2016 - November 2016

Trainer

SASTRA University

- Duties involved delivering lectures on Technical and Non-Technical aptitude.