

Sandino N. Vargas-Pérez

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RESEARCH INTERESTS Design and analysis of parallel and distributed algorithms • Computational biology problems in genomics • Big data analytics and processing • High performance computing optimizations

EDUCATION **Western Michigan University**, Kalamazoo, MI

Ph.D. Computer Science Sep 2012 – Dec 2017

- Dissertation Title: *A Hybrid Parallel Approach to High-Performance Compression of Big Genomic Files and In Compresso Data Processing*
- Advisor: Fahad Saeed, Ph.D.
- Defense date: August 2017

M.S. Computer Science Sep 2009 – Jan 2012

- Advisor: Ala Al-Fuqaha, Ph.D.

Pontificia Universidad Católica Madre y Maestra, Santiago, Dominican Republic

B.S. Computer and Systems Engineering, magna cum laude Jan 2004 – Jul 2008

- Final Project: NGO Administrative Software for Acción Callejera

WORK EXPERIENCE **Assistant Professor** Sep 2018 – Present

Department of Computer Science
Kalamazoo College

COMP490 – *Senior Seminar: Computing For Env. Science*
COMP490 – *Senior Seminar: Web Development*
COMP481 – *Parallel Computing*
COMP485 – *Networking & Dist. Systems*
COMP210 – *Data Structures*
COMP110 – *Introduction To Programming*
COMP108 – *Introduction To Scientific Computing*
COMP107 – *Pictures and Sounds: Programming with Multimedia*
COMP105 – *Introduction To Computer Science*

Instructor (adjunct) Sep 2017 – May 2018

Department of Computer Science
Western Michigan University
CS-3500 – *Introduction to Web Technologies*
Supervisor: Li Yang, Ph.D.

Research Assistant Jan 2015 – Dec 2017

Parallel Computing and Data Science Laboratory
Western Michigan University
Supervisor: Fahad Saeed, Ph.D.

Teaching Assistant Jan 2016 – Apr 2017

Department of Computer Science
Western Michigan University
CS-3500 – *Introduction to Web Technologies*
CS-4430/CS-5430 – *Database Management Systems*
Supervisor: Li Yang, Ph.D.

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|---|---------------------|
| VuFind Library Catalog Programmer | Jan 2012 – Apr 2015 |
| Western Michigan University Libraries (Waldo Library) | |
| Western Michigan University | |
| Supervisor: Keith Kelley, Ph.D. | |
| Graduate Assistant | Sep 2010 – Dec 2011 |
| Western Michigan University Libraries (Waldo Library) | |
| Western Michigan University | |
| Supervisor: Keith Kelley, Ph.D. | |

JOURNAL
PUBLICATIONS

1. **Vargas-Pérez, S.**, and Saeed, F. “*in compresso*: Parallel Technique and Data Structure for Compressive Genomics.” *IEEE/ACM Transactions on Computational Biology and Bioinformatics*. **To be submitted end of 2023.**
2. **Vargas-Pérez, S.**, and Saeed, F. “A Hybrid MPI-OpenMP Strategy to Speedup the Compression of Big Next-Generation Sequencing Datasets.” *IEEE Transactions on Parallel and Distributed Systems*, issue 99, 2017. DOI: 10.1109/TPDS.2017.2692782.

CONFERENCE
PUBLICATIONS

1. **Vargas-Pérez, S.** “Designing an Independent Study to Create HPC Learning Experiences for Undergraduates.” *2022 IEEE 29th International Conference on High Performance Computing, Data and Analytics Workshop (HiPCW)*, Bengaluru, India, 2022, pp. 6-11, DOI: 10.1109/HiPCW57629.2022.00006.
2. **Vargas-Pérez, S.**, and Saeed, F. “Scalable Data Structure to Compress Next-Generation Sequencing Files and its Application to Compressive Genomics.” *2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. Vol. 0, pp. 1923-1928, November 2017. DOI:10.1109/BIBM.2017.8217953.
3. **Vargas-Pérez, S.**, and Saeed, F. “A Parallel Algorithm for Compression of Big Next-Generation Sequencing Datasets.” *Proceedings of Parallel and Distributed Processing with Applications (IEEE ISPA-15)*, Vol. 3, pp. 196-201, Helsinki, Finland, August 2015. DOI: 10.1109/Trustcom.2015.632.

AWARDS

| | |
|---|---------------------|
| Herbert H. and Grace A. Dow Chair | Sep 2022 - Aug 2024 |
| • Recognition of teaching, scholarship, and service record to Kalamazoo College. | |
| Research Award | Apr 2017 |
| • Computer Science Graduate Student Research Award | |
| XSEDE EMPOWER | Sep 19 – DEC 2019 |
| • Expert Mentoring Producing Opportunities for Work, Education, and Research. | |
| • Student: Caroline Skalla | |
| XSEDE Allocation – TG-CCR150017 | Apr 2015 – Jun 2018 |
| • Allocation of time and space to work on the National Science Foundation’s (NSF) Extreme Science and Engineering Discovery Environment (XSEDE) super-computing infrastructure (the most advanced, powerful, and robust collection of integrated advanced digital resources and services in the world). | |
| • Extension of allocation: 2016 and 2017. | |
| Grants | |
| • Kalamazoo College | |
| • Heyl Summer Research Grant | Jun 2023 |
| • Teaching and Learning Committee’s Pedagogical Development Grant | Feb 2020 |

Travel Awards

- SIGCSE 2020 Conference. Portland, OR (*Canceled due to COVID-19*) Mar 2020
- Tapia Conference 2016 (Declined). Austin, TX Sep 2016
- 3rd IEEE International Workshop on Parallelism in Bioinformatics. Helsinki Aug 2015

WMU Grad Talks – 3MT Competition

- Three-Minute Thesis Competition, highest score winner
- Representative of Western Michigan University at the Midwestern Association of Graduate Schools (MAGS) Conference, Chicago, IL April 2016

PRESENTATIONS **Academic Computing Society.** Kalamazoo, MI Oct 2016

- “Compression Strategies for Big Data,” (invited speaker)

Guest Lecturer, WMU Department of Computer Science

- CS6030 – *High Performance Algorithms for Big Data Applications* Feb 2017
- CS4310 – *Design & Analysis of Algorithms* Apr 2016
- CS6030 – *High Performance Architecture & Algorithms* Jan 2015

Research and Creative Activities Poster Day, WMU

- “Identifying Overexpression of Genes in Cancerous Colorectal Tissue” Apr 2013

SERVICE

HiCOMB 2023

- Program Committee member for the 22nd IEEE International Workshop on High Performance Computational Biology. Feb 2023

SIGSE TS’2023

- Program Committee member for reviewing submissions to the ACM Student Research Competition (SRC) track. Nov 2022

NetMAHIB Journal

- Invited reviewer for the peer-reviewed Springer journal Network Modeling Analysis in Health Informatics and Bioinformatics. Feb 2021
- Journal impact factor: 1.06

Science Progress

- Invited reviewer for the peer-reviewed SAGE journal Science Progress. Jan 2021
- Journal impact factor: 1.906

IHPC-BOD 2019

- Invited workshop committee chair for the 2nd IEEE International Workshop on High-Performance Computing and Analytics for Big Omics Data. Nov 2019
- Part of the IEEE BIBM 2019.

IEEE/ACM TCBB Journal

- Invited reviewer for the peer-reviewed journal IEEE/ACM Transactions on Computational Biology and Bioinformatics. Dec 2018, Aug 2019
- Journal impact factor: 2.896

Signal, Image and Video Processing

- Invited reviewer for the peer-reviewed Springer journal Signal, Image and Video Processing. Nov 2018
- Journal impact factor: 1.894

IEEE TPDS Journal

- Invited reviewer for the peer-reviewed journal IEEE Transactions on Parallel and Distributed Systems. Sep 2018
- Journal impact factor: 3.402

IEEE Spectrum

- Invited reviewer for the IEEE Spectrum Magazine. Jul 2018

- Journal impact factor: 3.015

IEEE Network

- Invited reviewer for the peer-reviewed journal IEEE Network.
- Journal impact factor: 7.230

Oct 2017