CONTACT INFORMATION

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RESEARCH INTERESTS

My research has spanned the broad area of computer systems, specifically focusing on file & storage systems, operating systems, and parallel & distributed systems. I am the founding director of the Computer Systems Laboratory at the University of Louisville and a Senior Member of the IEEE.

EDUCATION

- **The University of Texas at San Antonio**, San Antonio, TX
  - Ph.D., Computer Science, Sep. 2007 - May 2013
    * Dissertation Title: *Improving Performance and Predictability of Storage Arrays*
    * College of Science Outstanding Research Award, 2012 - 2013, $5,000.
  - M.S., Computer Science (in parallel with Ph.D.)
    * Concentration in Computer and Information Security
- **Bilkent University**, Ankara, Turkey
  - B.S., Computer Engineering, Sep. 2003 - May 2007
  - Socrates/Erasmus Exchange Student, **University of Essex**, UK, Sep. 2005 - May 2006

WORK EXPERIENCE

- **University of Louisville**, Louisville, KY
  - Associate Professor (*tenured*), Computer Science and Eng., July 2019 - Present
  - Assistant Professor (*tenure-track*), Computer Science and Eng., Aug. 2013 - June 2019
- **The University of Texas at San Antonio**, San Antonio, TX
  - Graduate Research/Teaching Assistant, Sep. 2007 - May 2013
- **Rocket Fuel Inc.**, Redwood City, CA
  - Intern, Real-Time Bidding and Data Infrastructure (Hadoop) Teams, May 2012 - Aug. 2012
  - Received full-time job offer at the end of internship.

REFEREED PUBLICATIONS

[1] Caeden Whitaker, Sidharth Sundar, Bryan Harris, and **Nihat Altiparmak**. *Do We Still Need IO Schedulers for Low-Latency Disks?* In 15th ACM Hot Topics in Storage and File Systems (**HotStorage '23**), July 2023. Available: PDF.

[2] Sidharth Sundar, William Simpson, Jacob Higdon, Caeden Whitaker, Bryan Harris, and **Nihat Altiparmak**. *Energy Implications of IO Interface Design Choices.* In 15th ACM Hot Topics in Storage and File Systems (**HotStorage '23**), July 2023. Available: PDF.

[3] Bryan Harris and **Nihat Altiparmak**. *When Poll is More Energy Efficient than Interrupt.* In 14th ACM Hot Topics in Storage and File Systems (**HotStorage '22**), July 2022. Available: PDF.

[4] Bryan Harris, Michael Marzullo, and **Nihat Altiparmak**. *Real-Time Characterization of Data Access Correlations.* In IEEE International Symposium on Performance Analysis of Systems and Software (**ISPASS '21**), Stony Brook, NY, USA, March 2021. Available: PDF.

[5] Bryan Harris and **Nihat Altiparmak**. *Ultra-Low Latency SSDs' Impact on Overall Energy Efficiency.* In 12th USENIX Hot Topics in Storage and File Systems (**HotStorage '20**). USENIX Association, July 2020. Available: PDF.

[6] Bryan Harris and **Nihat Altiparmak**. *Monte Carlo Based Server Consolidation for Energy Efficient Cloud Data Centers*. In 11th IEEE International Conference on Cloud Computing Technology and Science (**CloudCom '19**), pages 263–270, Sydney, Australia, December 2019. **Best Research Paper Runner-up Award (Top 3 in 96 papers)**, Available: PDF.

[7] Erica Tomes, Everett N. Rush, and **Nihat Altiparmak**. *Towards Adaptive Parallel Storage Systems*. IEEE Transactions on Computers (**TC '18**), 67(12):1840–1848, December 2018. Doi: 10.1109/TC.2018.2836426. Available: PDF.

[8] Logan Hall, Bryan Harris, Erica Tomes, and **Nihat Altiparmak**. *Big Data Aware Virtual Machine Placement in Cloud Data Centers*. In 4th IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (**BDCAT '17**), Austin, Texas, December 2017. **Acceptance rate: 29 % (27/93)**, Available: PDF.

[9] Erica Tomes and **Nihat Altiparmak**. *A Comparative Study of HDD and SSD RAIDs' Impact on Server Energy Consumption*. In 19th IEEE International Conference on Cluster Computing (**CLUSTER '17**), Honolulu, Hawaii, September 2017. Available: PDF.

[10] Everett N. Rush, Bryan Harris, **Nihat Altiparmak**, and Ali Saman Tosun. *Dynamic Data Layout Optimization for High Performance Parallel I/O*. In 23rd IEEE International Conference on High Performance Computing (**HiPC '16**), Hyderabad, India, December 2016. **Acceptance rate: 25 % (40/160)**, Available: PDF.

[11] Everett Rush and **Nihat Altiparmak**. *Exploiting Replication for Energy Efficiency of Heterogeneous Storage Systems*. In 24th IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (**MASCOTS '16**), London, United Kingdom, September 2016. **Acceptance rate: 24.7 % (43/174)**, Available: PDF.

[12] **Nihat Altiparmak** and Ali Saman Tosun. *Multithreaded Maximum Flow Based Optimal Replica Selection Algorithm for Heterogeneous Storage Architectures*. IEEE Transactions on Computers (**TC '16**), 65(5):1543–1557, May 2016. Doi: 10.1109/TC.2015.2451620. Available: PDF.

[13] **Nihat Altiparmak** and Ali Saman Tosun. *Continuous Retrieval of Replicated Data from Heterogeneous Storage Arrays*. In 22nd IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (**MASCOTS '14**), Paris, France, September 2014. **Acceptance rate: 20.3 % (39/192)**, Available: PDF.

[14] Baris Tas, **Nihat Altiparmak**, and Ali Saman Tosun. *Low-Cost Indoor Location Management for Robots Using IR Leds and an IR Camera*. ACM Transactions on Sensor Networks (**TOSN '14**), 10(4):63:1–63:41, June 2014. Doi: 10.1145/2536713. Available: PDF.

[15] **Nihat Altiparmak** and Ali Saman Tosun. *Generalized Optimal Response Time Retrieval of Replicated Data from Storage Arrays*. ACM Transactions on Storage (**TOS '13**), 9(2):5:1–5:36, July 2013. Doi: 10.1145/2491472.2491474. Available: PDF.

[16] **Nihat Altiparmak** and Ali Saman Tosun. *Replication Based QoS Framework for Flash Arrays*. In 14th IEEE International Conference on Cluster Computing (**CLUSTER '12**), Beijing, China, September 2012. **Acceptance rate: 28.8 % (58/201)**, Available: PDF.

[17] **Nihat Altiparmak** and Ali Saman Tosun. *Integrated Maximum Flow Algorithm for Optimal Response Time Retrieval of Replicated Data*. In 41st IEEE International Conference on Parallel Processing (**ICPP '12**), Pittsburgh, Pennsylvania, September 2012. **Acceptance rate: 28.3 % (53/187)**, Available: PDF.

[18] **Nihat Altiparmak** and Ali Saman Tosun. *Equivalent Disk Allocations*. IEEE Transactions on Parallel and Distributed Systems (**TPDS '12**), 23(3):538–546, March 2012. Doi: 10.1109/TPDS.2011.177. Available: PDF.

[19] **Nihat Altiparmak**, Ali Tekeoglu, and Ali Saman Tosun. *DoS Resilience of Real Time Streaming Protocol*. In 30th IEEE International Performance Computing and Communications Conference (**IPCCC '11**), Orlando, Florida, November 2011. **Acceptance rate: 27.9 % (36/129)**, Available: PDF.

[20] Ali Tekeoglu, **Nihat Altiparmak**, and Ali Saman Tosun. *Approximating the Number of Active Nodes Behind a NAT Device.* In 20th IEEE International Conference on Computer Communications and Networks (**ICCCN '11**), Maui, Hawaii, August 2011. **Acceptance rate: 28.9 % (130/450)**, Available: PDF.

[21] Baris Tas, **Nihat Altiparmak**, and Ali Saman Tosun. *Low Cost Indoor Location Management System using Infrared Leds and Wii Remote Controller.* In 28th IEEE International Performance Computing and Communications Conference (**IPCCC '09**), Phoenix, Arizona, December 2009. **Acceptance rate: 29.7 % (43/145)**, Available: PDF.

NSF Grants

[1] *"Research Experiences for Undergraduates (REU) Supplement for the NSF CC* LARCC Award (2430270)"*, **National Science Foundation (NSF)**, CNS-OAC Division, **Nihat Altiparmak (sole PI)**, 2025, **$20,000**.

[2] *"Research Experiences for Undergraduates (REU) Supplement for the NSF CC* CARDS Award (2322248)"*, **National Science Foundation (NSF)**, CNS-OAC Division, **Nihat Altiparmak (sole PI)**, 2025, **$20,000**.

[3] *"CC* Compute-Campus: Louisville Academic Research Compute Cluster (LARCC)"*, **National Science Foundation (NSF)** OAC Division (2430270), **Nihat Altiparmak (PI)**, 12/1/2024 - 11/30/2026, **$700,000**. **In collaboration with Co-PIs Rui Yu, Sabur Hassan Baidya, Badri Narayanan, Lee Thompson, and Senior Personnel Hichem Frigui, Robert Berson, Hermann Frieboes, Jeremy Gaskins, Vance Jaeger, Juw Won Park, Dibson Gondim, Christina Ralph-Nearman at the University of Louisville.*

[4] *"REU Site: Computer Systems Research"*, **National Science Foundation (NSF)** CNS Division (2349076), **Nihat Altiparmak (Co-PI)**, 4/1/2024 - 3/31/2027, **$469,804**. Project webpage: Summer 2025 **In collaboration with PI Wei Zhang at the University of Louisville.*

[5] *"CC* Data Storage: Cardinal Academic Research Data Storage (CARDS)"*, **National Science Foundation (NSF)** OAC Division (2322248), **Nihat Altiparmak (PI)**, 9/1/2023 - 8/31/2025, **$500,000**. **In collaboration with Co-PIs Sabur Hassan Baidya, Dibson Dibe Gondim, Melissa Smith, Lee Thompson, and Senior Personnel Robert Berson, Aly Farag, Hermann Frieboes, Hichem Frigui, Jeremy Gaskins, Lutz Haberzettl, Benne Holwerda, Vance Jaeger, Badri Narayanan, Juw Won Park, Christina Ralph-Nearman, Eric Rouchka, Corey Watson, Hui Zhang at the University of Louisville.*

[6] *"REU Site: Undergraduate Research Experiences in Computer Systems at University of Louisville"*, **National Science Foundation (NSF)** CNS Division (2050925), **Nihat Altiparmak (Co-PI)**, 5/1/2021 - 4/31/2024, **$405,051**. **In collaboration with PI Wei Zhang at the University of Louisville.*

[7] *"RII Track-1: Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures."*, **National Science Foundation (NSF)** OIA Division (1849213), **Nihat Altiparmak (Senior Personnel)**, 7/1/2019 - 6/1/2024, **$24,000,000**. **In collaboration with PI Rodney Andrews at the University of Kentucky, Co-PI Dan Popa at the University of Louisville, and Co-PIs John Anthony, Czarena Crofcheck, and Seth DeBolt at the University of Kentucky.*

[8] *"MRI: Acquisition of a High Performance Big Data Analysis Platform."*, **National Science Foundation (NSF)** CNS Division (1828521), **Nihat Altiparmak (PI)**, 10/1/2018 - 9/30/2020, **$478,727**. **In collaboration with Co-PIs Olfa Nasraoui, Ayman El-baz, Bert Little, Nejat Egilmez, and Senior Personnel Robert Keynton, Hichem Frigui, Richard Kerber, and Karunarathna Kulasekera at the University of Louisville.*

[9] *"RET Site: Research Experiences for Teachers in Big Data and Data Science"*, **National Science Foundation (NSF)** CNS Division (1801513), **Nihat Altiparmak (Senior Personnel)**, 2/15/2018 - 1/31/2021, **$598,128**. Project webpage: Summer 2018, Summer 2019 **In collaboration with PI Olfa Nasraoui, Co-PI Stephanie Philipp, and Senior Personnel Jason Immekus, Dan Popa, Aly Farag, Hichem Frigui, Huacheng Zeng, and Hui Zhang at the University of Louisville.*

[10] *"Research Experiences for Undergraduates (REU) Supplement for the NSF CRII Award (1657296)"*, **National Science Foundation (NSF)**, CNS-CSR Division, **Nihat Altiparmak (sole PI)**, 2017, **$16,000**.

[11] *"CRII: CSR: Online Analysis of Disk I/O for Automatic Storage System Optimization"*, **National Science Foundation (NSF)**, CISE Research Initiation Initiative (CRII) Award CNS-CSR Division (1657296), **Nihat Altiparmak (sole PI)**, 2/15/2017 - 1/31/2020, **$175,000**.

OTHER GRANTS

[1] *"OpenSFS Competitive Cluster Equipment Donation Grant"*, **Open Scalable File Systems (OpenSFS)**, Inc., **Nihat Altiparmak (PI)**, 3/8/2018, **Equipment Description**, **$251,350** equipment value. **In collaboration with Co-PI Harrison Simrall at the University of Louisville.*

[2] *"Logistics Sourcing Model"*, **OMYA, Inc.**, **Nihat Altiparmak (Co-PI)**, 1/1/2017 - 9/30/2017, **$175,000**. **In collaboration with PI Monica Gentili and Co-PIs Kevin Gue and Olfa Nasraoui at the University of Louisville.*

[3] *"TinMan Systems Education Grant Award"*, **Tinman Systems, Inc.**, **Nihat Altiparmak (Co-PI)**, 5/5/2016 - 1/21/2017, **$29,700 full retail value**. **In collaboration with PI Olfa Nasraoui at the University of Louisville.*

[4] *"Microsoft Azure Education Grant Award"*, **Microsoft**, **Nihat Altiparmak (sole PI)**, 1/22/2016 - 1/21/2017, **$12,600 full retail value, annually renewable**.

[5] *"Big Data Analysis in Medicine"*, **University of Louisville**, 21st Century Initiative, **Nihat Altiparmak (Co-PI)**, 1/1/2017 - 12/31/2019, **$1,857,444**. **In collaboration with PIs Robert S. Keynton and Ayman El-Baz, and Co-PIs Gregory N. Barnes, Roberto Bolli, Nigel Cooper, Hichem Frigui, Henry J. Kaplan, Olfa Nasraoui, Eric Rouchka, and Mark Slaughter at University of Louisville.*

[6] *"Dynamic Big Data Reorganization in Multi-Disk Storage Systems"*, **University of Louisville**, Executive Vice President for Research and Innovation (EVPRI), Research-II Grant Program, **Nihat Altiparmak (sole PI)**, 1/1/2016 - 12/31/2016, **$10,000**.

[7] *"Optimizing Virtual Machine Scheduling in the Cloud"*, **University of Louisville**, Executive Vice President for Research and Innovation (EVPRI), Research-I Grant Program, **Nihat Altiparmak (sole PI)**, 1/1/2016 - 12/31/2016, **$3,000**.

[8] *"Exploiting Replication for Energy Efficiency of Large Scale Heterogeneous Storage Systems"*, **University of Louisville**, Executive Vice President for Research and Innovation (EVPRI), Undergraduate Research Grant Program, **Nihat Altiparmak (sole PI)**, 1/1/2016 - 12/31/2016, **$3,000**.

[9] *"Amazon Web Services (AWS) Education Grant Award"*, **Amazon**, **Nihat Altiparmak (sole PI)**, 12/2/2015 - 12/1/2016, **$1,000 full retail value, annually renewable**.

TEACHING EXPERIENCE

- **University of Louisville**, Louisville, KY
  - *CSE 420: Design of Operating Systems*, junior/senior level core undergraduate course.
    * Previously taught 25 times in FA'13-25 and SP'14-25 semesters.
  - *CSE 629: Distributed System Design*, graduate level course.
    * Previously taught 10 times in SP'16-25 semesters.
  - *CSE 593/693/796: Storage Systems*, undergraduate/graduate level independent study course.
    * Previously taught 10 times in FA'17,19; SP'16-17,19,25; and SU'17-18 semesters.

- **The University of Texas at San Antonio**, San Antonio, TX
  - *CS 2073: Computer Programming w/Eng. Applications*, entry level undergraduate; SP'13

SERVICE & PROFESSIONAL ACTIVITIES

- **School/Community/Outreach:**
  - **The International Collegiate Programming Contest (ICPC):**
    * Faculty coach responsible for training students for the ICPC (2017 - Present).
      - First place winning team in the Kentucky/Indiana regional competition (2017)
      - Two teams advanced to the North America Division Championships (2021)
    * Satellite University Director hosting 10+ universities every year for the Kentucky/Indiana regional competition (2014 - 2019).

  - **Undergraduate Student Advising:**
    * Involvement of undergraduate students in research, and supporting them through NSF REU supplements/site grants.
      - Jacob Higdon (2022 - Present): Generated one publication as an undergrad, received NSF REU Site stipend, and NSF travel award.
      - Caeden Whitaker (2021 - Present): Generated two publications as an undergrad, received NSF REU Site stipend, and NSF travel award.
      - Sidharth Sundar (2021 - Present): Generated two publications as an undergrad, received NSF REU Site stipend, and NSF travel award.
      - Bryan Harris (2015 - 2017): Generated two publications as an undergrad, and received NSF REU supplement.
      - Erica Tomes (2016 - 2017): Generated two publications as an undergrad, received NSF REU supplement, and NSF travel award.
      - Logan Hall (2016 - 2017): Generated one publication as an undergrad, and received NSF travel award.

  - **K-12 Teacher Mentoring/Training for Computer Science Research (six weeks, summers):**
    * Training and involvement of K-12 teachers in computer science research, performing K-12 curriculum development with them, and supporting them through NSF RET grant:
      - Katherine Perraut and Mollie Mason, Carroll County Middle School, Summer 2018.
      - Jacob Rexroat, Frankfort High School, Summer 2019.
      - Willis Holmes, Hopkins County Career & Technology Center, Summer 2019.
      - Training program made available online

- **Departmental:**
  - *Director*, CSE Undergraduate Studies (2024 - Present)
  - *Director*, CSE Undergraduate Research (2022 - Present)
  - *Member*, CSE Curriculum Committee (2017 - Present)
  - *Member*, CSE Tenure-Track Faculty Search Committee (2024)
  - *Member*, CSE Tenure-Track Faculty Search Committee (2023)
  - *Co-Chair*, CSE Tenure-Track Faculty Search Committee 1 (2020)
  - *Co-Chair*, CSE Tenure-Track Faculty Search Committee 2 (2020)
  - *Member*, CSE Department Chair Search Committee (2019)
  - *Member*, CSE PhD Fellowship Committee (2017, 2018)
  - *Member*, CSE Term Faculty Search Committee (2017)

- **Professional:**
  - **Selected Grant Proposal Reviewing:**
    * Proposal Review Panelist; National Science Foundation (NSF), four CISE-CNS-CSR panels within the last six years

$\ast$ Proposal Reviewer; Kentucky Science and Engineering Foundation (KSEF), 2016, 2018

- **Selected Journal/Conference Refereeing:**
  - $\ast$ Reviewer; IEEE Transactions on Computers (TC)
  - $\ast$ Reviewer; IEEE Transactions on Cloud Computing (TCC)
  - $\ast$ Reviewer; IEEE Transactions on Dependable and Secure Computing (TDSC)
  - $\ast$ Reviewer; IEEE Transactions on Circuits and Systems (TCAS)
  - $\ast$ Reviewer; Distributed and Parallel Databases - An International Journal, Springer
  - $\ast$ Reviewer; Computers and Electrical Engineering - An International Journal, Elsevier
  - $\ast$ Reviewer; Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery
  - $\ast$ Reviewer; Journal of Computing and Information Technology
  - $\ast$ Technical Program Committee Member; IEEE 42nd Conference on Local Computer Networks (LCN); 2017, 2018, 2019, 2020, 2021
  - $\ast$ Technical Program Committee Member; 4th Workshop on Advances in Software and Hardware for Big Data to Knowledge Discovery (ASH), in conjunction with IEEE Big-Data; 2017, 2018
  - $\ast$ Technical Program Committee Member; PSCBig: Privacy and Security Challenges on Big Data, in conjunction with SIMBig; 2018
  - $\ast$ Technical Program Committee Member; IEEE 22nd International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS); 2014
  - $\ast$ Reviewer; European Symposium on Algorithms (ESA); 2012
  - $\ast$ Reviewer; IEEE Global Communications Conference (GLOBECOM); 2011

- **Resources (reports, data, publications, and extensive results are available online):**
  - Computer Systems Laboratory: http://labs.cse.louisville.edu/csl/

STUDENT MENTORING

- **PhD Students Mentored for Research (6):** Everett Rush (2016 -), Bryan Harris (2018-2024), Erica Tomes (2018 -), Ranjini Subramanian (2017-2018, switched adviser), Samir Banjanovic (2023 -), Jacob Higdon (2025 -).

- **Master's Students Mentored for Research (16):** Samir Banjanovic, Viralkumar Intwala, Everett Rush, Andy Majot, James Strong, Bret Murphy, Samuel O'Gara, Dillon Li, Bryan Harris, Erica Tomes, Jared Gillespie, Michael Marzullo, Wendell Richmond, Jacob Higdon, Adeel Ali, Saed Kusmic.

- **Undergraduate Students Mentored for Research (18):** Bryan Harris, Logan Hall, Erica Tomes, Adam Vest, Jared Gillespie, Samuel Chesak, Martin Heil, Michael Marzullo, Allen Boss, Hamilton Tobon-Mosquera, Sidharth Sundar, Caeden Whitaker, Derek Osborne, Jacon Higdon, William Simpson, Wendell Richmond, Sarah Massie, Stephanie Sithu.

- **PhD Dissertation Committees Served (24):** Wenlong Sun, Heba Elgazzar, Mahsa Badami, Gopi Chand Nutakki, Behnoush Abdollahi, Mohammed Sayed, Wiem Safta, Mohammed Alshammari, Mohammad Farhangi, Olurotimi Seton, Mahdi Moalla, Mina Shekari, Pegah Haghighi, Khalil Damak, Aneseh Alvanpour, Sami Khenissi, Mariem Boujelbene, Juan Lin, Dylan Goodin, Tomas Felipe Llano-Rios, Fadoua Khmaissia, Hanqing Hu, Asuman Acun, Bassam Fatouh.

- **MS Thesis Committees Served (12):** Louis Curtis, Grace Mahlbacher, Cagla Acun, Ankita Sahu, Connor Burns, Corey Chitwood, Reid Honeycutt, Veenesh Rai, Sydney Herold, Dunia Zedan, Mary Baxter, Olivia Cooney.