# Linh Bao Ngo

Department of Computer Science
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## Education

**Ph.D. in Computer Engineering (December 2011)**
*Institution:* University of Arkansas at Fayetteville
*Advisor:* Dr. Amy W. Apon
*Dissertation:* Application of Empirical Mode Decomposition to the Characterization and Forecasting of Job Arrivals in an Enterprise Computing Environment

**M.S. in Computer Engineering (May 2006)**
*Institution:* University of Arkansas at Fayetteville
*Advisor:* Dr. Amy W. Apon
*Thesis:* Using Shibboleth for Authorization and Authentication to the Subversion Version Control Repository System

**B.S. in Computer Engineering (May 2003)**
*Institution:* University of Arkansas at Fayetteville

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## Research Interests

High performance computing, cloud computing, edge computing, large-scale computing infrastructure, ML on edge, computer science education.

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## Appointments

**Associate Professor**
Computer Science Department, West Chester University, (2023 - present)

**Senior Research Computing Facilitator**
Office of Research and Innovation, Drexel University, (2024)

**Director of High Performance Computing**
Office of Research and Innovation, Drexel University, (2023 - 2024)

**Associate Professor and Assistant Chair**
Computer Science Department, West Chester University, (2022 - 2023)

**Principle Research Facilitator**

Research Computing and Data: Engagement, Clemson University, (2023)

**Senior High Performance Computing Facilitator**
Research Computing and Data: Engagement, Clemson University, (2019 - 2023)

**Assistant Professor**
Computer Science Department, West Chester University, (2018 - 2022)

**Director of Data Science**
Cyberinfrastructure and Technology Integration, Clemson University, (2015 - 2018)

**Research Assistant Professor**
School of Computing, Clemson University, (2015 - 2018)

**Deputy Director of Big Data Systems Lab**
School of Computing, Clemson University, (2014 - 2015)

**Post-Doctoral Associate**
School of Computing, Clemson University, (2012 - 2013)

**Graduate Assistant**
Computer Science and Computer Engineering, University of Arkansas, (2004 - 2011)

**Intern**
Saigon Center of Techniques and Technology, Ho Chi Minh, Viet Nam, (Summer 2004)

**Tutor**
Enhanced Learning Center, University of Arkansas, (2003 - 2004)
Student Support Service, University of Arkansas, (2002 - 2003)
Math Department, University of Arkansas, (2001 - 2002)

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# Teaching Activities

**West Chester University of Pennsylvania**

- Fundamentals in Computer Science (CSC 110): Fall 2018, Summer 2019
- Computer Science I (CSC 141): Spring 2020
- Computer Science II (CSC 142): Summer 2020
- **Computer Systems** (CSC 231): Spring 2021, Fall (2020, 2021, 2022)
- Data Structures and Algorithms (CSC 241): Fall 2019
- Computer Security 2 (CSC 302): Fall (2018, 2019), Spring 2023
- **Operating Systems** (CSC 331): Spring (2019, 2020, 2021), Fall (2019, 2020, 2023)
- **Software Engineering Capstone** (CSC 402): Spring 2025, Fall 2024
- **Distributed and Cluster Computing** (CSC 466): Fall (2018, 2019, 2020), Spring 2023

- **Big Data Engineering** (CSC 467): Winter (2019, 2020), Fall (2021, 2022, 2024)
- **Introduction to Cloud Computing** (CSC 468): Spring (2019, 2020, 2021, 2022, 2024)
- Computer Programming 1 (CSC 512): Spring 2019
- Introduction to Data Structures and Algorithms (CSC 516): Spring 2019
- **Operating Systems** (CSC 525): Spring 2021, Fall 2021
- Advanced Data Structures (CSC 530): Fall 2024
- Analysis of Algorithm (CSC 560): Spring 2020
- **Machine Learning on Embedded Systems** (CSC 581): Spring 2025
- Linux Administration and Security (CSC 586): Summer (2019, 2020, 2021, 2022)
- **Graduate Seminar on Access Control in the Cloud** (CSC 603): Fall 2022

**Drexel University**

- Parallel Programming (CS 676): Spring 2024
- Technical Workshops for Drexel faculty and staff
  - Introduction to Linux
  - Introduction to Research Computing on Picotte
  - Introduction to Programming using Python
  - Introduction to Programming using R

**Clemson University**

- Data Mining (CE 8450): Summer 2018
- Distributed & Cluster Computing (CPSC 4770/6770): Fall 2017 to Spring 2018
- Distributed & Cluster Computing (CPSC 3620): Fall 2012 to Spring 2017
- Data Intensive Computing (CPSC 8810): Fall 2012
- Half-day Technical Workshops: These workshops are offered four times per academic year for all Clemson faculty, staff, and students to learn hands-on skills and best practices in subjects related to research computing:
  - Introduction to Data Science using R
  - Data Mining using R
  - Big Data Analytics using R and Spark
  - Textual Data Analysis using R
  - Introduction to Hadoop MapReduce
  - Introduction to Apache Spark
  - Introduction to MPI using Python
  - Introduction to Machine Learning in Python

  - Introduction to Deep Learning in Python

**University of Arkansas at Fayetteville**

- Programming Foundation II Lab: Fall 2009
- High Performance Computing Lab: Spring 2008, Spring 2009, Spring 2010, Spring 2011

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# Funded Awards

**Principal Investigator**
XSEDE Educational Allocation Award (08/2020 – 08/2021): Distributed and Cluster Computing Education. (1,000GB storage and 50,000 SU of Bridges Supercomputer, valued at $1,157.50).

**Principal Investigator**
West Chester University (08/2020 – 07/2021) Research in Mathematics and the Sciences Award: Performance Evaluation of Big Data Infrastructure Deployment via High Throughput Computing Platform ($4,100)

**Principal Investigator**
West Chester University Provost's Research Grant Award (06/2019 – 06/2021): Enabling Human-In-The-Loop Control for Large-Scale Rare Event Detection Systems ($9,915.00)

**Principal Investigator (former Co-Principal Investigator)**
NSF Award #1405767 (2014-2021): II NEW: Infrastructure to Support Research in Network-Aware Data-Intensive Computing ($668,357).

**Co-Principal Investigator**
NSF Award #1243436 (2012-2016): INSPIRE: Evaluating the Effect of Cyberinfrastructure on Universities' Production Process ($600,000).

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# Professional Activities

**National Science Foundation Panel Reviews:**

- DUE (2025)
- OCA (2020)
- CISE (2020, 2024)

**National Science Foundation Individual Review Requests:**

- SoS (2021)
- SBE (2021, 2022)

**Conference Program Committee:**

- Practice and Experience in Advanced Research Computing: 2020, 2021, 2022, 2023, 2024
- ACM Technical Symposium on Computer Science Education: 2020, 2021, 2022
- ACM Innovation and Technology in Computer Science Education: 2020, 2021

- Workshop on Scholarly Big Data: AI Perspectives, Challenges, and Ideas: 2016
- Workshop on Data-Centric Infrastructure for Big Data Science: 2015

**Institutional Committee:**

- Department Evaluation Committee (2022-2025)
- CAPC Department Representative (2021-2023)
  - CAPC Program Review Subcommittee (2021, 2022)
  - CAPC General Education Subcommitee (2023)
- Chair, Committee for the Evaluation of Adjunct Faculty (2020-2023)
- Chair, Search Committee 2020-2021
- Member of WCUPA Computer Advisory Committee (2021)

**Community Participation:**

- ACI-REF Facilitator
- XSEDE Campus Champion
- Computer Science Teacher Association

**Faculty Coach/Advisor:**

- Computer Science Competitive Programming Team/Club

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# Publications

**Journal publications**


[1] B. Ngo, J. Formato, J. J. May, N. Ho, H. Bui, and L. B. Ngo, "Face: A framework for ai-driven coding generation evaluation," *Journal of Computing Sciences in Colleges*, vol. 40, no. 3, pp. 263–276, 2024.

[2] N. D. Tran, J. J. May, N. Ho, and L. B. Ngo, "Exploring chatgpt's ability to solve programming problems with complex context," *Journal of Computing Sciences in Colleges*, vol. 39, no. 3, pp. 195–209, 2023.

[3] V. D. Avina, M. Amiruzzaman, S. Amiruzzaman, L. B. Ngo, and M. A. A. Dewan, "An ai-based framework for translating american sign language to english and vice versa," *Information*, vol. 14, no. 10, p. 569, 2023.

[4] L. B. Ngo and H. Bui, "Sustainable and scalable setup for teaching big data computing," *Journal of Computational Science*, vol. 14, no. 1, 2023.

[5] A. Reppert, B. Montecinos-Velazquez, H. Kahl, R. Reid, D. Rivas, D. Spampinato, H. Zhong, and L. B. Ngo, "A kubernetes framework for learning cloud native development," *Journal of Computing Sciences in Colleges*, vol. 38, no. 8, pp. 99–108, 2023.

[6] L. B. Ngo, "Experience in teaching cloud computing with a project-based approach," *Journal of Computing Sciences in Colleges*, vol. 38, no. 3, pp. 107–119, 2022.

[7] L. B. Ngo and J. Kilgannon, "Virtual cluster for hpc education," *Journal of Computing Sciences in Colleges*, vol. 36, no. 3, pp. 20–30, 2020.

[8] S. M. Khan, M. Chowdhury, L. B. Ngo, and A. Apon, "Multi-class twitter data categorization and geocoding with a novel computing framework," *Cities*, vol. 96, p. 102 410, 2020.
[9] L. B. Ngo, R. Burns, and S. Chen, "Containerizing cs learning environments," *Journal of Computing Sciences in Colleges*, vol. 36, no. 3, pp. 169–169, 2020.
[10] L. B. Ngo and J. Denton, "Using cloudlab as a scalable platform for teaching cluster computing," *The Journal of Computational Science Education*, vol. 10, no. 1, 2019.
[11] S. M. Khan, M. Chowdhury, and L. B. Ngo, "Non-real-time transportation applications: Potential use of connected vehicle data and data infrastructure requirements," *Journal of Infrastructure Systems*, vol. 25, no. 1, p. 02 518 002, 2019.
[12] L. B. Ngo, A. T. Srinath, J. Denton, and M. Ziolkowski, "Unifying computing resources and access interface to support parallel and distributed computing education," *Journal of Parallel and Distributed Computing*, vol. 118, pp. 201–212, 2018.
[13] Y. Du, M. Chowdhury, M. Rahman, K. Dey, A. Apon, A. Luckow, and L. B. Ngo, "A distributed message delivery infrastructure for connected vehicle technology applications," *IEEE Transactions on Intelligent Transportation Systems*, vol. 19, no. 3, pp. 787–801, 2017.
[14] A. W. Apon, L. B. Ngo, M. E. Payne, and P. W. Wilson, "Assessing the effect of high performance computing capabilities on academic research output," *Empirical Economics*, 2014.
[15] A. W. Apon, L. B. Ngo, S. Ahalt, V. Dantuluri, C. Gurdgiev, M. Limayem, and M. Stealey, "High performance computing instrumentation and research productivity in us universities," *Journal of Information Technology Impact*, 2010.
[16] L. B. Ngo and A. W. Apon, "Shibboleth as a tool for authorized access control to the subversion repository system," *Journal of Software*, 2007.

**Peer-reviewed conference proceedings**

[1] N. Ho, J. May, B. Ngo, J. Formato, L. Ngo, H. Bui, *et al.*, "Predicting chatgpt's ability to solve complex programming challenges," in *2024 IEEE International Conference on Big Data (BigData)*, IEEE, 2024, pp. 1756–1764.
[2] N. Ho, T. C. Le, N. T. Huynh, L. B. Ngo, *et al.*, "Causal associations between temporal events," in *2023 IEEE International Conference on Big Data (BigData)*, IEEE, 2023, pp. 1135–1142.
[3] M. Franchi, R. Kahn, M. Chowdhury, S. Khan, K. Kennedy, L. B. Ngo, and A. Apon, "Webots. hpc: A parallel simulation pipeline for autonomous vehicles," in *Practice and Experience in Advanced Research Computing*, 2022, pp. 1–4.
[4] W. H. Halabi, D. N. Smith, J. C. Hill, J. W. Anderson, K. E. Kennedy, B. M. Posey, L. B. Ngo, and A. W. Apon, "Viability of azure iot hub for processing high velocity large scale iot data," in *Companion of the ACM/SPEC International Conference on Performance Engineering*, 2021, pp. 73–76.
[5] T. Clark, K. Codd, and L. B. Ngo, "Studying break-in attempts across multiple servers using apache spark and security logs," in *Spring Conference of the Pennsylvania Computer and Information Science Educators*, vol. 36, 2021.
[6] R. S. DeFever, W. Hanger, S. Sarupria, J. Kilgannon, A. W. Apon, and L. B. Ngo, "Building a scalable forward flux sampling framework using big data and hpc," in *Proceedings of the Practice and Experience in Advanced Research Computing on Rise of the Machines (learning)*, 2019, pp. 1–8.
[7] L. B. Ngo, L. Cui, and S. Chen, "Computing infrastructures to support cybersecurity education," in *34th Annual Conference of The Pennsylvania Association of Computer and Information Science Educators*, 2019, p. 30.

[8] L. B. Ngo and A. Apon, "Using shibboleth for authorization and authentication to the subversion version control repository system," in *Fourth International Conference on Information Technology (ITNG'07)*, IEEE, 2007, pp. 760–765.

[9] Y. Li, X. Zhang, A. Srinath, R. B. Getman, and L. B. Ngo, "Combining hpc and big data infrastructures in large-scale post-processing of simulation data: A case study," in *Proceedings of the Practice and Experience on Advanced Research Computing*, 2018, pp. 1–7.

[10] J. Anderson, C. Gropp, L. B. Ngo, and A. Apon, "Random access in nondelimited variable-length record collections for parallel reading with hadoop," in *2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM)*, IEEE, 2017, pp. 965–970.

[11] K. Lantz, S. Khan, L. B. Ngo, M. Chowdhury, S. Donaher, and A. Apon, "Potentials of online media and location-based big data for urban transit networks in developing countries," in *Transportation Research Board 94th Annual Meeting*, 2015.

[12] M. E. Payne, L. B. Ngo, F. Villanustre, R. Taylor, and A. W. Apon, "Dynamic provisioning of data intensive computing middleware frameworks: A case study," in *Proceedings of the 1st Workshop on The Science of Cyberinfrastructure: Research, Experience, Applications and Models*, ACM, 2015, pp. 3–10.

[13] M. Liang, C. Trejo, L. Muthu, L. B. Ngo, A. Luckow, and A. W. Apon, "Evaluating r-based big data analytic frameworks," in *2015 IEEE International Conference on Cluster Computing*, IEEE, 2015, pp. 508–509.

[14] W. Hanger, R. S. DeFever, L. B. Ngo, A. Apon, and S. Sarupria, "Scalable forward flux sampling, scaffs: Software platform to study rare events in molecular simulations," in *SC15 Workshop: Producing High Performance and Sustainable Software for Molecular Simulation*, 2015.

[15] A. W. Apon, A. Herzog, L. B. Ngo, M. E. Payne, and P. W. Wilson, "A punctuated equilibrium theory of investment in high-performance computing," in *Atlanta Conference on Science and Science Innovation Policy*, 2015.

[16] L. B. Ngo, E. B. Duffy, and A. W. Apon, "Teaching hdfs/mapreduce systems concepts to undergraduate," in *NSF/TCPP Workshop on Parallel and Distributed Computing Education*, 2014.

[17] J. Anderson, K. Kennedy, L. B. Ngo, A. Luckow, and A. W. Apon, "Synthetic data generation for the internet of things," in *IEEE International Conference on Big Data*, IEEE, 2014.

[18] M. E. Payne, L. B. Ngo, F. Villanustre, and A. W. Apon, "Managing the academic data lifecycle: A case study of hpcc," in *IEEE Workshop on Scholarly Big Data: Challenges & Issues*, 2014.

[19] W. C. Moody, L. B. Ngo, and A. W. Apon, "Jummp: Job uninterrupted maneuverable mapreduce platform," in *IEEE Cluster 13*, IEEE, 2013.

[20] M. E. Payne, L. B. Ngo, and A. W. Apon, "Academic publishing as a social media paradigm," in *IEEE Workshop on Scholarly Big Data*, IEEE, 2013.

[21] A. Apon, L. B. Ngo, M. E. Payne, and P. W. Wilson, "Efficiency as a measure of knowledge production of research universities," in *The Atlanta Conference on Science of Science and Innovation Policy*, 2013.

[22] L. B. Ngo, A. Apon, and D. Hoffman, "An empirical study on forecasting using decomposed arrival data of an enterprise computing system," in *2012 Ninth International Conference on Information Technology-New Generations*, IEEE, 2012, pp. 756–763.

[23] L. B. Ngo, V. Dantuluri, M. Stealey, S. Ahalt, and A. Apon, "An architecture for mining and visualization of us higher educational data," in *2012 Ninth International Conference on Information Technology-New Generations*, IEEE, 2012, pp. 783–789.

[24] L. B. Ngo, A. Apon, and D. Hoffman, "A forecasting capability study of empirical mode decomposition for the arrival time of a parallel batch system," in *2010 Seventh International Conference on Information Technology: New Generations*, IEEE, 2010, pp. 420–425.

[25] L. B. Ngo, B. Lu, H. Bui, A. Apon, N. Hamm, L. Dowdy, D. Hoffman, and D. Brewer, "Application of empirical mode decomposition to the arrival time characterization of a parallel batch system using system logs," in *2009 International Conference on Modeling, Simulation, and Visualization Methods*, CSREA Press, 2009, pp. 300–306.

[26] B. Lu, L. B. Ngo, H. Bui, A. Apon, N. Hamm, L. Dowdy, D. Hoffman, and D. Brewer, "Capacity planning of a commodity cluster in an academic environment: A case study," in *LCI International Conference on High-Performance Clustered Computing*, 2008.

[27] B. Lu, L. B. Ngo, H. Bui, A. Apon, N. Hamm, L. Dowdy, D. Hoffman, and D. Brewer, "Workload modeling for performance management.," in *Int. CMG Conference*, 2008, pp. 229–240.

[28] L. B. Ngo, B. Lu, H. Bui, A. Apon, N. Hamm, L. Dowdy, D. Hoffman, and D. Brewer, "Workload characterization using empirical mode decomposition," in *The Seventh Annual Conference on Applied Research in Information Technology*, 2008, p. 37.

**Book Chapters**

[1] L. B. Ngo and N. T. Ho, "Data science tools and techniques to support data analytics in transportation applications," in *Data Analytics for Intelligent Transportation Systems*, Elsevier, 2025, pp. 67–97.

[2] S. M. Khan, L. B. Ngo, E. A. Morris, M. T. Ashraf, K. Dey, and Y. Zhou, "Social media data in transportation," in *Data analytics for intelligent transportation systems*, Elsevier, 2025, pp. 317–336.

[3] B. Posey, L. B. Ngo, M. Chowdhury, and A. Apon, "Infrastructure for transportation cyber-physical systems," in *Transportation Cyber-Physical Systems*, Elsevier, 2018, pp. 153–171.

[4] D. L. Hoffman, A. Apon, L. Dowdy, B. Lu, N. Hamm, L. Ngo, and H. Bui, "Performance modeling of enterprise grids," in *Data Engineering: Mining, Information and Intelligence*, Springer US, 2010, pp. 169–201.

**Technical reports**

[1] M. Franchi, R. Kahn, L. B. Ngo, S. Khan, M. Chowdhury, K. Kennedy, and A. Apon, "A parallel autonomous vehicle simulation pipeline on high-performance computing," Tech. Rep., 2022.

**Posters and Presentations**

[1] S. Sarupria, R. DeFever, W. Hanger, L. B. Ngo, and A. Apon, "Saffire: Enabling large scale simulations of rare events," in *2018 AIChE Annual Meeting*, AIChE, 2018.

[2] S. Sarupria, B. Glatz, R. Defever, W. Hanger, L. B. Ngo, and A. Apon, "Elucidating heterogeneous ice nucleation mechanisms using large scale rare event simulations," in *Abstracts of Papers of the American Chemical Society*, AIChE, vol. 252, 2016.

[3] P. Xuan, K. Ferguson, C. Marshall, J. McCann, L. B. Ngo, Y. Zheng, and A. W. Apon, "An infrastructure to support data integration and curation for higher educational research," in *the 8th IEEE International Conference on eSccience*, 2012.