Big Data Research
Big Data Research

For more than a decade, UNLV researchers have been conducting a world-class effort in various aspects of big data research. This program has been funded by federal and state agencies, as well as many industrial partners. Our researchers have addressed questions related to many fields, including big data, relative to national security and health issues.

We would like to introduce you to some of our researchers. Please feel free to contact us if we can help with future collaboration.
Big Data
Research Areas of Expertise

- Unstructured data analysis
- Cloud computing
- Deep learning
- Document layout analysis
- Human-computer interaction
- Information retrieval
- UAS and GIS integration
- Medical image analysis
- Data mining
- Physiological data sensing applications
- Social network mining using NLP and ML
- Image processing and computer vision
- Machine learning for object detection, semantic segmentation and temporal action localization
Big Data Research

Why UNLV?

• UNLV is a leader among the state’s public entities dedicated to advancing big data research in the region and beyond.

• UNLV is located centrally in the west and houses the high-performance computing center, also known as The National Supercomputing Institute.

• Additional data center space is located at the National Supercomputing Institute, which houses the Intel Supercomputer “Cherry Creek” (26,000 cores) cluster. The site provides Federal and State researchers with state-of-the-art, highly-secure cloud computing.
Big Data Research

Why UNLV?

• UNLV’s outstanding achievements in big data research, its success in forging public/private partnerships, and its excellent academic programs place the university at the forefront of the field.

• UNLV has been awarded funding from various agencies in the Big Data area.
Faculty Involved in Big Data Research

Dr. Shaikh Arifuzzaman  
*Assistant Professor, Ubiquitous Data*

Dr. Mingon Kang  
*Assistant Professor, Department of Computer Science*

Dr. Jeehee Lee  
*Assistant Professor, Department of Civil and Environmental Engineering and Construction*

Dr. Fatma Nasoz  
*Associate Professor, Department of Computer Science*

Dr. Emma Regentova  
*Professor, Department of Electrical and Computer Engineering*

Dr. Haroon Sahotra  
*Professor, Department of Civil and Environmental Engineering and Construction*

Dr. Bryar Shareef  
*Assistant Professor, Department of Computer Science*

Dr. Kazem Taghva  
*Professor and Chair, Department of Computer Science*
Big Data Research

Additional Resources

Big Data

Research Highlights
Dr. Shaikh Arifuzzaman  
Assistant Professor, Department of Computer Science  
Director, Data-intensive Scalable Computing Lab (DiSC Lab)  
Phone: (702) 774-3406  
Email: shaikh.arifuzzaman@unlv.edu  
- Expertise (Big Data + AI/ML + HPC)  
  - Parallel algorithms and high-performance computing for data-intensive domains  
  - AI/ML methods and applications:  
    - Deep learning  
    - Graph convolutional network  
    - Scaling ML methods  
  - Social network mining using NLP and ML  
  - Computing on biological/health datasets  
  - Building big data applications and systems  
  - Graph data analytics, modeling, and visualization
Dr. Shaikh Arifuzzaman
Assistant Professor, Department of Computer Science

Relevant Publications

- Faysal M, Bremer M, Chan C, Shalf J, Arifuzzaman S. “Fast Parallel Index Construction for Efficient K-truss-based Local Community Detection in Large Graphs.” 52nd International Conference on Parallel Processing (ICPP 2023), ACM; 2023; USA.
Dr. Mingon Kang
Assistant Professor, Department of Computer Science
Director, DataX Lab (http://www.dataxlab.org)
Phone: (702) 895-4884
Email: mingon.kang@unlv.edu

- Expertise
  - Machine learning, big data analytics, data science
  - Deep learning:
    - Interpretable deep learning
    - Evidential deep learning for trustworthy prediction
    - Integrative deep learning
  - Integrative analysis of multiple types of data, e.g., images and structured data
  - Medical image analysis
Dr. Mingon Kang
Assistant Professor, Department of Computer Science

Relevant Publications

• A. Yaganapu, M. Kang, "Multi-layered Self-attention Mechanism for Weakly Supervised Semantic Segmentation", *Computer Vision and Image Understanding* (IF: 4.5), 2023

• S. Han, M. Park, S. Kosaraju, J. Lee, J. H. Lee, T. Oh, M. Kang, "Evidential deep learning for trustworthy prediction of enzyme commission number", *Briefings in Bioinformatics* (IF: 9.5), 2023


• J. Jo, S. Jung, J. Park, Y. Kim, and M. Kang, "Hi-LASSO: High-performance python and apache spark packages for feature selection with high-dimensional data", *PLOS ONE* (IF: 3.752), 2022


• H. Lee, M. Kang, Y. Li, D. Seo, D. Kim, "Epidemic Vulnerability Index for Effective Vaccine Distribution against Pandemic", *ISBRA*, 2021


• S. Kim, S. Yang, K. Lim, E. Ko, H. Jang, M. Kang, P. Suh, and J. Joo, "Prediction of Alzheimer’s disease-specific phospholipase c gamma-1 SNV by deep learning-based approach for high-throughput screening", Proceedings of the National Academy of Sciences of the United States of America (PNAS), 2021


Dr. Jeehee Lee
Assistant Professor, Department of Civil and Environmental Engineering and Construction
Email: jeehee.lee@unlv.edu

Expertise

• Unstructured data analysis: natural language process (NLP), text mining, information retrieval, information extraction
• Physiological data sensing applications in smart building and smart city
• Interpretable machine learning
Dr. Jeehee Lee
Assistant Professor, Department of Civil and Environmental Engineering and Construction

Relevant Publications

Dr. Fatma Nasoz
Associate Professor, Department of Computer Science
Phone: (702) 895-0097
Email: fatma.nasoz@unlv.edu

- Expertise
  - Machine learning and deep learning
  - Data analysis and visualization
  - Human-computer interaction
  - Cloud computing
Dr. Fatma Nasoz
Associate Professor, Department of Computer Science

Relevant Publications


Dr. Emma E. Regentova
Professor, Department of Electrical and Computer Engineering
Phone: (702) 895-3187
Email: emma.regentova@unlv.edu

- Expertise
  - Analysis of images (medical, photon- and neutron CAT), video, multi- and hyperspectral data for applications
  - Machine learning for object detection, semantic segmentation and temporal action localization
  - DSP accelerator circuits on FPGA

Methane gas leaks detection on the drone platform

Estimation of water drop penetration time and evaluation of soil water repellency

Ground Truth
Time (Frames)
207
900
1110

Prediction
Dr. Emma Regentova  
Professor, Department of Electrical and Computer Engineering  

Relevant Publications  
Dr. Haroon Sahotra  
Professor, Department of Civil and Environmental Engineering  
Director, GIS and Remote Sensing Core Lab  
Phone: (702) 774-1463  
Email: haroon.stephen@unlv.edu  

• Expertise  
  • Sensors aboard UAS for remote sensing: testing and applications  
  • UAS and GIS integration  
  • Applications of UAS to resource mapping, monitoring, and management  
  • Data fusion and data mining of multi-scale sources: UAS, aerial, and spaceborne sensors
Relevant Publications

Dr. Bryar Shareef
Assistant Professor, Department of Computer Science
Phone: (702) 774-3420
Email: bryar.shareef@unlv.edu

• Expertise
  • Machine learning
  • Deep learning
  • Medical image analysis
  • Image processing and computer vision
Dr. Bryar Shareef
Assistant Professor, Department of Computer Science

Relevant Publications


Dr. Kazem Taghva  
Chair and Professor, Department of Computer Science  
Phone: (702) 895-0873  
Email: kazem.taghva@unlv.edu  

- Expertise  
  - Databases  
  - Machine learning  
  - Information retrieval
Dr. Kazem Taghva
Chair and Professor, Department of Computer Engineering

Relevant Publications