Ryan G. Benton

Education:

- *Ph.D in Computer Science*, May 2001, University of Louisiana at Lafayette
- *M.S. in Computer Science*, May 1997, University of Louisiana at Lafayette
- *B.S. in Computer Information Systems,* May 1995, Loyola University New Orleans

Professional History:

- Associate Professor, School of Computing, University of South Alabama, August 2021 – present
- Assistant Professor, School of Computing, University of South Alabama, August 2015 – August 2021
- Research Scientist, Informatics Research Institute, University of Louisiana at Lafayette, July 2014 – July 2015
- Research Scientist, Center for Visual and Decision Informatics, University of Louisiana at Lafayette, February 2012 – June 2014
- Research Scientist, Center for Advanced Computer Studies, University of Louisiana at Lafayette, January 2002 – January 2012
- Director of Research, Star Software Systems Corporation, Warner Robins, Georgia, November 2011 – June 2005

Professional Memberships:

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE) and IEEE Computer Society
- Member, Association for the Advancement of Artificial Intelligence
- Member, Association for Computing Machinery (ACM)
- Member, Association for Information Systems
- Member, International Neural Network Society

Professional Activities:

- Program Committee, IEEE International Conference on BIG Data, 2021.
- Faculty Advisor, ACM Student Chapter University of South Alabama, 2020 – present.
- Program Committee, IEEE International Conference on Data Mining, 2017 – 2020.
- Co-Chair, 2nd Discriminative Pattern Mining Workshop at the IEEE International Conference on Big Data, 2021.
- Co-Chair, Discriminative Pattern Mining Workshop at the IEEE International Conference on Big Data, 2020.
- Co-Chair, 2nd Big Data Predictive Maintenance using Artificial Intelligence Workshop at the IEEE International Conference on Big Data, 2020.
- Co-Chair, Big Data Predictive Maintenance using Artificial Intelligence Workshop at the IEEE International Conference on Big Data, 2019.
- Reviewer, Journal Article, BMC Medical Informatics and Decision Making, March 6, 2019 - March 31, 2019
- Demo Session Co-Chair, IEEE International Conference on Data Mining, 2017.
- Program Committee, 2nd International Workshop on Semantics-Powered Data Analytics, 2017.
- Reviewer, Information Sciences, 2016 - present.
- Chair, IEEE Computer Science Society, IEEE Lafayette Section, 2011 - 2015.
- Proceedings Chair, IEEE/WIC/ACM International Conference on Web Intelligence, 2013.
- Proceedings Chair, IEEE/WIC/ACM International Conference on Intelligent Agent Technology, 2013.

- Program Committee, IEEE International Conference on Granular Computing, 2011 and 2012.
- Program Committee, IEEE International Conference on Computational Science and Engineering, 2012.
- Program Committee, IARIA International Conference on Data Analytics, 2012.
- National Science Foundation CISE/SBE AC Subcommittee on Research Portfolio Analysis, 2010.
- Program Committee, IEEE Symposium on Foundations and Practice of Data Mining, 2010.
- Co-Chair, Sponsorship Committee, 5th International Conference on Data Mining, 2005.
- Non-Committee Reviewer, Rough Sets, Fuzzy Sets, Data Mining, and Granular Computing, 2005.
- External Reviewer for Workshop on Multimedia Information Systems, 2001.
- Additional Reviewer for 13th International Conference on Industrial and Engineering Application of Artificial Intelligence and Expert Systems, 2000.

Grants/Contract:

- "Data Driven Prognostics", STTR project funded by Missile Defense Agency. Principal Investigator: **Ryan Benton**. Co-PI: Chee-Hung Henry Chu. Amount: $70,000. September 2003 - March 2004.
- "SBIR Phase I: Automated Image Annotation", funded by National Science Foundation. Principal Investigator: **Ryan Benton**. Co-PIs: Biren Shah and Vijay V. Raghavan. Amount: $100,000. January 1, 2005 - June 30, 2005.
- "Open Source Analytical Tools for Geospatial Data Analysis", funded by State of Louisiana, Governor's Information Technology Initiative (GITI). Principal Investigator: **Ryan Benton**. Co-PIs: Xiaoduan Sun and Emad Habib. July 1, 2007 – June 30, 2010.
- "Performance Evaluation of Highway Infrastructure Using Image and Video Data", funded by State of Louisiana, Governor's Information Technology Initiative (GITI). Principal Investigator: Chee-Hung Henry Chu. Co-PIs: Xiaoduan Sun and **Ryan Benton**. July 1, 2007 – June 30, 2010.
- "Automated Construction of 3-D Road Models from Right-of-Way Video", funded by Louisiana Transportation Research Center. Principal Investigator: **Ryan Benton**. Co-PIs: Xiaoduan Sun and Chee-Hung Henry Chu. Amount: $29,621. January 1, 2008 – June 30, 2009.
- "GE Exploratory Work in Alzheimer's Disease Prediction and Asset Allocation/Reallocation", funded by GE HealthCare, Principal Investigator: Vijay Raghavan. Co-PIs: **Ryan Benton**, Chee-Hung Henry Chu and Kemal Efe. Amount: $33,000. March 1, 2008 – December 31, 2009.
- "Web 3.0 and Beyond: Enhancement of the Laboratory for Internet Computing for the Future Web Generation", funded by the Louisiana Board of Regents Support Fund. Principal Investigator: Vijay Raghavan. Co-PIs: **Ryan Benton**, Chee-Hung Henry Chu, and Zonghuan Wu. Amount: $77,000. July 1, 2009 – June 30, 2010.
- "LI Proposal: Parallel Algorithms for Large Scale Data Clustering", funded by the LONI Institute. PI: Vijay V. Raghavan, Co-PIs: **Ryan Benton**, Raju Gottumukkala, Ramesh Kolluru, and Box Leangsuksun. April 1, 2010 – March 31, 2011.
- "Collaborative Research: Interactive Information Extraction, Structuring and Visualization in a Research Portfolio", contract from the National Science Foundation. Principal Investigator: Vijay V. Raghavan. Co-PI: **Ryan Benton**. Amount: $12,480. May 10, 2010- October 31, 2010.
- "I/UCRC Phase I: Center for the Visual and Decision Informatics (CVDI)", funded by the National Science Foundation. Principal Investigator: Vijay V. Raghavan. Co-PIs: **Ryan Benton**, Carolina Cruz-Neira (active until 03/2016), Raju Gottumukkala, and Ramesh Kolluru. Amount: $470,584. February 15, 2012 – September 30, 2017.
- "Social Media for Decision Informatics with Application to Emerging Events", funded by the CVDI Industry Advisory Board, PI: **Ryan Benton** Co-PI: Chaomei Chen, Jian Chen and Raju Gottumukkala. Amount: $77,000. July 1, 2012 – June 30, 2013.

- "I/UCRC FRP: Collaborative Research: Fundamental Research in Visualization-based Gap Analysis and Link Prediction", funded by the National Science Foundation. Principal Investigator: Vijay V. Raghavan. Co-PI: **Ryan Benton**. Amount: $100,000. August 1, 2013 – July 31, 2015.
- "A Spatio-Temporal Data Mining Approach for Fraud Detection", funded by the CVDI Industry Advisory Board, PI: Jian Chen. Co-PI: **Ryan Benton** and Raju Gottumukkala. Amount: $77,000. July 1, 2013 – June 30, 2014.
- "Large-scale Social Media Analytical Tools with Application to Detecting Emerging Events", funded by the CVDI Industry Advisory Board, PIs: **Ryan Benton** and Xiaohua Tony Hu. Co-PI: Wiemao Ke. Amount: $121,822. July 1, 2013 – June 30, 2014.
- "A Predictive Analytics Framework for Spatio-Temporal Hotspots", funded by the CVDI Industry Advisory Board, PI: Jian Chen. Co-PI: **Ryan Benton** and Raju Gottumukkala. Amount: $69,707. July 1, 2014 – June 30, 2015.
- "Analyzing, Modeling, and Summarizing Social Media and Linked Data Sets", funded by the CVDI Industry Advisory Board, PI: Xiaohua Tony Hu. Co-PI: **Ryan Benton**. Amount: $48,000. July 1, 2014 – June 30, 2015.
- "MRI: Development: A Distributed Visual Analytics Sandbox for High Volume Data Streams", funded by the National Science Foundation. Principal Investigator: Raju Gottumukkala. Co-PI: **Ryan Benton (active until 3/2017)**, Christoph Borst, Dmitri Perkins (active until 8/2015), Magdy Bayoumi (added 8/2015), Satya Katragadda (added 3/2017) and Vijay Raghavan. Amount: $515,998. August 1, 2014 – July 31, 2019. Note: I stepped down as Co-PI as I was unable to carry out the intended Co-PI functions from USA; this had been awarded while at UL Lafayette.
- "CC*IIE Networking Infrastructure: Cyberinfrastructure - Creation of Science DMZ at UL Lafayette", funded by the National Science Foundation. Principal Investigator: Ben Blundell. Co-PI: **Ryan Benton**, Raju Gottumukkala, Arun Lakhotia, and Joseph Neigel. Amount: $491,513. October 1, 2014 – September 30, 2016.
- "Predicting Future Relations: Incremental and Robust Link Prediction", funded by the CVDI Industry Advisory Board, PI: Vijay V. Raghavan. Co-PIs: **Ryan Benton**, Christoph Borst, and Raju Gottumukkala. Amount: $82,435. July 1, 2015 – June 30, 2016.
- "Comparative Knowledge Discovery: Analyzing, Understanding and Visualizing Rankings", funded by the CVDI Industry Advisory Board, PI: Vijay V. Raghavan (U.S. Lead), Moncef Gabbouj (Finnish Lead). Co-PIs: **Ryan Benton**, Christoph Borst, Raju Gottumukkala, Ahmad Iftikhar, Alexandros Iosifidis, and Mehmet Tozal. Amount $64,778 (U.S. IAB) and €115,000 (Finnish IAB). July 1, 2016 – June 30, 2017.
- "MRI: Acquisition of Adaptive Cluster for Performance and Forensics Analysis of Distributed Machine Learning", funded by the National Science Foundation. Principal Investigator: **Ryan Benton**. Co-PI: William Glisson and Jordan Shropshire. Amount: $147,100. October 1, 2017 – September 30, 2020.
- "Anomalous Detection of Engine Data", funded by the CARFS Industry Advisory Board, PI: Tom Johnsten. Co-PIs: **Ryan Benton**, Jeffery T. McDonald, and Todd R. Andel. Amount: $41,964. September 2017 – August 2018.
- "On-Device Detection via Anomalous Environmental Factors", funded by the CARFS Industry Advisory Board, PI: Todd R. Andel. Co-PIs: **Ryan Benton** and Jeffery T. McDonald. Amount: $25,000. September 2017 – August 2018.
- "Visual Analytics for Cloud Ecosystems", funded by the CARFS Industry Advisory Board, PI: Jordan D. Shropshire. Co-PI: **Ryan Benton**. Amount: $54,000. September 2017 – August 2018.
- "Machine Learning-based Manufacturing", funded by the CARFS Industry Advisory Board, PI: Tom Johnsten. Co-PIs: **Ryan Benton** and David Bourrie. Amount: $25,000. August 2018 – August 2019.
- "On-Device Detection via Anomalous Environmental Factors – Year 2", funded by the CARFS Industry Advisory Board, PI: Todd R. Andel. Co-PIs: **Ryan Benton** and Jeffery T. McDonald. Amount: $25,000. August 2018 – August 2019.

- "Machine Learning in Data Streaming Environments", funded by the CARFS Industry Advisory Board, PI: Tom Johnsten. Co-PIs: **Ryan Benton** and David Bourrie. Amount: $25,000. August 2019 – August 2020.
- "Deep Neural Networks for Forensic & Industry Classifications", funded by the CARFS Industry Advisory Board, PI: Aviv Segev. Co-PIs: **Ryan Benton** and Rituparna Datta. Amount: $25,000. August 2019 – August 2020.
- "Analyzing Differences in Data: Contrast Mining", funded by the CARFS Industry Advisory Board, PI: **Ryan Benton**. Co-PIs: David Bourrie, Tom Johnsten and Scott Sittig. Amount: $25,000. August 2019 – August 2020.
- "Visualizing Cloud Network Traffic Anomalies", funded by the CARFS Industry Advisory Board, PI: Jordan D. Shropshire. Co-PI: **Ryan Benton**. Amount: $25,000. August 2019 – August 2020.
- "Contract #140D0419-9-0004", funded by the Department of Interior, PI: Jeffery T. McDonald. Investigators: **Ryan Benton**, Tom Johnsten, David Bourrie, Aviv Segev, Jordan Shropshire, Ocllo Robinson, Rick Green, Dimitrios Damopoulos, Suresh Choubey, Rituparna Datta, and Sukhwan Jung. Amount: $7,100,000. January 2019 – December 2021.
- "Cloud Forensics: From Visualization to Animation", funded by the CARFS Industry Advisory Board, PI: Jordan D. Shropshire. Co-PI: **Ryan Benton**. Amount: $25,000. January 2021 – December 2021.
- "Cloud Stack Analysis via Performance Metrics", funded by the CARFS Industry Advisory Board, PI: **Ryan Benton**. Co-PI: Suresh Choubey, Dimitrios Damopoulos, and Jordan D. Shropshire. Amount: $25,000. January 2021 – December 2021.
- "Metabolic Energy Crisis Signature Predicts Quality of Life in Survivors of Acute Respiratory Failure", funded by the National Institutes of Health, PI: Raymond Langely, Investigator: **Ryan G. Benton**, Amount: 4249,683 (including overhead), May 2021 – April 2022.

Publications:

Book Chapters

- **R. Benton**, "Effective Removal of Noisy Data via Batch Effect Processing", Bioinformatics in microRNA Research, Jingshan Huang, Glen M. Borchert, Dejing Dou, Jun Huan, Wenjun Lan, Ming Tan, and Bin Wu, Editors, Springer, pp. 187-196, 2017.
- S. Singh, **R. Benton**, A. Singh, and A. Singh, "Machine Learning Techniques in Exploring micro-RNA Gene Discovery, Targets, and Functions", Bioinformatics in microRNA Research, Jingshan Huang, Glen M. Borchert, Dejing Dou, Jun Huan, Wenjun Lan, Ming Tan, and Bin Wu, Editors, Springer, pp. 211-224, 2017.
- Y. Xie, T. Johnsten, V. V. Raghavan, **R. G. Benton**, and W. Bush, "A Comprehensive Granular Model for Decision Making with Complex Data", Granular Computing and Decision-Making: Interactive and Iterative Approaches, Witold Pedrycz and Shyi-Ming Chen, Editors, Springer, pp. 33-46, 2015.
- B. Shah, **R. Benton**, Z. Wu, V. Raghavan, "Automatic and Semi-automatic Techniques for Image Annotation", Semantic-based Visual Info. Retrieval, Yu-Jin Zhang, Editor, Idea Group Publishing, pp. 112-134, 2007.

Special Report to the National Science Foundation

- V. Raghavan, Y. Xie, T. Johnsten, **R. Benton**, B. Lemoine, D. Difallah, "Concept Map-based Organized for REsearch Portfolios (C-MORE)", in *CISE and SBE AC Subcomittee on Discovery in a Research Portfolio: Tools for Structuring, Analyzing, Visualizing and Interacting with Proposal and Award Portfolios*, 20 pages, Nov. 2011.

Journal

- D. M. Mink, J. McDonald, S. Bagui, W. B. Glisson, J. Shropshire, **R. Benton**, And S. Russ, "Near-Real-Time IDS for the U.S. FAA's NextGen ADS-B", Big Data and Cognitive Computing, Vol 5, No 2, 15 pages, 2021.

- R. J. Langley, M. E. Migaud, L. Flores, J. W. Thompson, E. A. Kean, M. M. Mostellar, M. Mowry, P. Luckett, L D. Purcell, J. Lovato, S. Gandotra, **R. Benton**, D. C. Files, K. S. Harrod, M. N. Gillespie and P. E. Morris, "A metabolomic endotype of bioenergetic dysfunction predicts mortality in critically ill patients with acute respiratory failure", Scientific Reports, Vol 11, 12 pages, 2021.
- F. Huang, X. Leng, M. V. Kasukurthi, Y. Huang, D. Li, S. Tan, G. Lu, J. Lu, **R. G. Benton**, G. M. Borchert, and J. Huang, "Utilizing Machine Learning Techniques to Predict the Efficacy of Aerobic Exercise Intervention on Young Hypertensive Patients Based on Cardiopulmonary Exercise Testing", in Journal of Healthcare Engineering, Vol 2021, 14 pages, 2021.
- S. Choubey, **R. G. Benton**, and T. Johnsten, "A Holistic End-to-End Prescriptive Maintenance Framework" in Data-Enabled Discovery and Applications, Vol 4, 20 pages, 2020.
- B. Ma, Z. Wu, S. Li, **R. Benton**, D. Li, Y. Huang, M. V. Kasukurthi, J. Lin, G. M. Borchert, S. Tan, G. Li, M. Yang and J. Huang, "Development of a support vector machine learning and smart phone Internet of Things-based architecture for real-time sleep apnea diagnosis", in BMC Medical Informatics and Decision Making, Vol 20, Supplement 14, 13 pages, 2020.
- J. Li, Z. Zhang, S. Li, **Ryan Benton**, Y. Huang, M. V. Kasukurthi, D. Li, J. Lin, G. M. Borchert, S. Tan, G. Li, B. Ma, M. Yang and J. Huang, "A partial encryption algorithm for medical images based on quick response code and reversible data hiding technology", in BMC Medical Informatics and Decision Making, Vol 20, Supplement 14, 16 pages, 2020.
- S. Jung, R. R. Kandadi, R. Datta, **R. Benton**, and A. Segev, "Identification of Technology-relevant Entities Based on Trend Curves and Semantic Similarities", in International Journal of Web and Semantic Technology, iVol 11, No. 1/2/3, pp 1-16, 2020.
- R. Renner, S. Li, Y. Huang, A. C. van der Zijp-Tan, S. Tan, D. Li, M. V. Kasukurthi, **R. Benton**, G. M. Borchert, J. Huang and G. Jiang, "Using an artificial neural network to map cancer common data elements to the biomedical research integrated domain group model in a semi-automated manner", in BMC Medical Informatics and Decision Making, Vol. 19, Supplement 7, 13 pages, 2019.
- B. Ma, C. Li, Z. Wu, Y. Huang, A. C. van der Zijp-Tan, S. Tan, D. Li, A. Fong, C. Basetty, G. M. Borchert, **R. Benton**, B. Wu and J. Huang, "Muscle fatigue detection and treatment system driven by internet of things", in BMC Medical Informatics and Decision Making, Vol. 19, Supplement 7, 9 pages, 2019.
- P. Luckett, J. T. McDonald, W. B. Glisson, **R. Benton**, J. Dawson, B. A. Doyle, "Identifying Stealth Malware Using CPU Power Consumption and Learning Algorithms", in Journal of Computer Security, Vol. 26, No. 5, 589-613, 2018.
- T. Johnsten, L. Fain, L. Fain, **R. Benton**, E. Butler, L. Pannell, and M, Tan, "Exploiting Multi-Layered Vector Spaces for Signal Peptide Detection", International Journal of Data Mining and Bioinformatics, Vol. 13, No. 2, 141-157, 2015.
- M. S. Ayhan, **R. G. Benton**, V. V. Raghavan, and S. Choubey, "Exploitation of 3D Stereotactic Surface Projection for Predictive Modeling of Alzheimer's Disease", in International Journal of Data Mining and Bioinformatics, Vol. 7, No 2, pp. 146-165, 2013.
- G.-L. Feng, I. Jangjaimon and **R. Benton**, "Fast Wireless Network Coding for Real-time data", in Communications in Information Science and Management Engineering, Vol 2., No. 12, pp. 71-95, 2012.

Invited Paper for Conferences/Workshops

- V. V. Raghavan, **R. G. Benton**, T. Johnsten, and Y. Xie, "Representations for Large-scale Sequence Data Mining: A Tale of Two Vector Space Models", in International Conference on Rough Sets, Fuzzy Sets, Data Mining, and Granular Computing, pp. 15-25, October 11-14, 2013.

Refereed Papers for Conferences/Workshops

- J. Shropshire, M. Allen, and **R. Benton,** "Taxonomy of Applications of Artificial Intelligence for Cyber Security Administration", Annual Symposium on Information Assurance, pp. 73-80, June 8-9, 2021.
- A. A. C. Delgado, W. B. Glisson, N. Shashidhar, J. T. McDonald, G. Grispos, and **R. Benton**, "Detecting Deception Using Machine Learning", Hawaii International Conference on System Sciences, pp. 7122-7131, Jan 5-8, 2021

- T. Watts, **R. Benton**, D. Bourrie, and J. Shropshire, "Insight from a Containerized Kubernetes Workload Introspection", Hawaii International Conference on System Sciences, pp. 6955-6964 , Jan 5-8, 2021
- J. T. McDonald, N. Herron, W. B. Glisson, and **R. Benton**, "Machine Learning-Based Android Malware Detection Using Manifest Permissions", Hawaii International Conference on System Sciences, pp. 6976-6985, Jan 5-8, 2021.
- W. Green, T. Johnsten, and **R. G. Benton**, "TADS: Transformation of Anomalies in Data Streams", Discriminative Pattern Mining Workshop at IEEE International Conference on Big Data, pp. 4284-4292, Dec 10 - 13, 2020.
- A. Austin and **R. Benton**, "Effects of Missing Members on Classifier Ensemble Accuracy", IEEE International Conference on Big Data, pp. 4998-5006, Dec 10 - 13, 2020.
- S. Choubey, **R. Benton**, and T. Johnsten, "Dynamic Thresholding Leading to Optimal Inventory Maintenance", Second Workshop on Big Data Predictive Maintenance Using Artificial Intelligence (BDPM-AI) at IEEE International Conference on Big Data, pp. 4112-4121, Dec 10 - 13, 2020.
- E. Harshany, **R. Benton**, D. Bourrie, M. Black, and W. Glisson, "DFS3: Automated Distributed File System Storage State Reconstruction", International Workshop on Digital Forensics at the International Conference on Availability, Reliability and Security, 10 pages, August 25-28, 2020.
- C. S. Brown and **R. Benton**, "Decision Surfaces of Localized Classifiers", International Joint Conference on Neural Networks, 8 pages, July 19-24, 2020.
- S. Jung, R. R. Kandadi, R. Datta, **R. Benton** and A. Segev, "Identification of Technology-Relevant Entities Based on Trend Curves", International Conference on Information Technology Convergence and Services, pp 1 - 13, May 30-31, 2020.
- J. Shropshire and **R. Benton**, "User Evaluation of a Visual Approach to Cloud Security", Southeast Decision Sciences Institute Annual Meeting, 11 pages, Feb 12-14, 2020.
- J. Shropshire and **R. Benton**, "Container and VM Visualization for Rapid Forensic Analysis", Hawaii International Conference on System Sciences, pp. 6397-6406, Jan 6-10, 2020.
- A. Kumar, W. B. Glisson, and **R. Benton**, "Network Attack Detection using an Unsupervised Machine Learning Algorithm", Hawaii International Conference on System Sciences, pp. 6496-6505, Jan 6-10, 2020.
- T. Johnsten, W. Green, L. Crook, H. Y. Chan, **R. Benton** and D. Bourrie, "Discovery of Action Rules for Continuously Valued Data", IEEE International Conference on Cognitive Machine Intelligence, pp. 127-135, December 12-14, 2019.
- J. Lewis, **R. Benton**, D. Bourrie, and J. Lavergne, "Enhancing Itemset Tree Rules and Performance", IEEE International Conference on Big Data, pp. 1143-1150, Dec 6-12, 2019.
- P. Luckett, T. Watts, J. T. McDonald, L. Hively, and **R. Benton**, "A Deep Learning Approach to Phase-Space Analysis for Seizure Detection", ACM International Conference on Bioinformatics, Computational Biology and Health Informatics, pp. 190-196, September 7-10, 2019.
- S. Choubey, **R. Benton**, and T. Johnsten, "Prescriptive Equipment Maintenance: A Framework", Big Data Predictive Maintenance using Artificial Intelligence at IEEE International Conference on Big Data, pp. 4366-4374, Dec 6-12, 2019.
- C. S, Brown and **R. Benton**, "Local Gaussian Process Features for Clinical Sensor Time-Series", Machine Learning and Artificial Intelligence in Bioinformatics and Medical Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1288-1295, Nov 18-21, 2019.
- G. Yang, X, Leng, F. Huang, M. V. Kasukurthi, Y. Huang, D. Li, J. Lin, S. Tan, G. Lu, **R. Benton**, G. M. Borchert, B. Ma, and J. Huang, "Use CPET data to predict the intervention effect of aerobic exercise on young hypertensive patients", Biomedical and Health Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1699-1702, Nov 18-21, 2019.
- M. V. Kasukurthi, D. Zhang, M. Housevera, Y. Huang, D. Li, J. Lin, S. Tan, B. Ma, **R. Benton**, S. Li, G. M. Borchert, and H. Huang, "SURFr: Algorithm for identification and analysis of ncRNA-derived RNAs", Biomedical and Health Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1504-1507, Nov 18-21, 2019.

- J. Li, Z. Zhang, S. Li, **R. Benton**, Y. Huang, M. V. Kasukurthi, D. Li, J. Lin, G. M. Borchert, S. Tan, B. Ma, M. Yang, and J. Huang, "Reversible Data Hiding Based Key Region Protection Method in Medical Images", Biomedical and Health Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1526-1530, Nov 18-21, 2019.
- B. Ma, Z. Wu, S. Li, **R. Benton**, D. Li, Y. Huang, M. V. Kasukurthi, J. Lin, G. M. Borchert, S. Tan, M. Yang, and J. Huang, "A SVM-Based Algorithm to Diagnose Sleep Apnea", Biomedical and Health Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1556-1560, Nov 18-21, 2019.
- T. Watts, **R. Benton**, W. Glisson, and J. Shropshire, "Insight from a Docker Container Introspection", Hawaii International Conference on System Sciences, 10 pages, January 8-11, 2019.
- R. Renner, S. Li, Y. Huang, S. Tan, D. Li, A. C. van der Zijp-Tan, **R. Benton**, G. M. Borchert, J. Huang, and G. Jiang, "Mapping Common Data Elements to a Domain Model Using an Artificial Neural Network", IEEE International Conference on Bioinformatics and Biomedicine, 1532-1535, December 3-6, 2018.
- A. M. Gautier, T. R. Andel, and **R. Benton**, "On-Device Detection via Anomalous Environmental Factors", Proceedings of the 8th Software Security, Protection, and Reverse Engineering Workshop, 8 pages, December 3-4, 2018.
- C. Parker, J. T. McDonald, T. Johnsten, and **R. Benton**, "Android Malware Detection Using Step-Size Based Multi-layered Vector Space Models", IEEE International Conference on Malicious and Unwanted Software, 10 pages, October 22-24, 2018.
- G. Daly, **R. Benton**, and T. Johnsten, "A Multi-Objective Evolutionary Action Rule Mining Method", IEEE Congress on Evolutionary Computation, 2105-2112, July 8 - 13, 2018.
- C. S. Brown, W. B. Glisson, **R. Benton**, J. Shropshire, T. Watts, and T. Sullivan, "Image Segmentation Stability: An Empirical Investigation", IEEE SoutheastCon, 8 pages, April 19-22, 2018.
- S. Abbady, C.-Y. Ke, J. Lavergne, J. Chen, V. Raghavan and **R. Benton**, "Online Mining for Association Rules and Collective Anomalies in Data Streams", in Workshop on Real-time & Stream Analytics in Big Data at IEEE Conference on Big Data, pp. 2288-2297, December 11-14, 2017.
- M. K. Pusala, **R. G. Benton**, V. V. Raghavan, R. N. Gottumukkala, "Supervised Approach to Rank Predicted Links Using Interestingness Measures", International Workshop on Biomedical and Health Informatics at IEEE International Conference on Bioinformatics and Biomedicine, pp. 1085 - 1092, November 13-16, 2017.
- D. Mink, W. B. Glisson, **R. Benton**, K-K R. Choo, "Manipulating the Five V's in the Next Generation Air Transportation System", Workshop on Security and Privacy in the Internet Of Things at the International Conference on Security and Privacy in Communication Systems, pp. 271-282, October 25, 2017.
- M. Van Devender, W. Glisson, **R. Benton**, and G. Grispos, "Understanding De-identification of Healthcare Big Data", in Americas Conference on Information Systems, Boston, Massachusetts, 10 pages, August 10-12, 2017.
- S. Katragadda, **R. Benton**, and V. Raghavan, "Sub-Event Detection from Tweets", in IEEE International Joint Conference on Neural Networks, Anchorage, Alaska, pp. 2128-2135, May 14-19, 2017.
- S. Katragadda, **R. Benton**, and V. Raghavan, "Framework for Real-Time Event Detection using Multiple Social Media Sources", 50th Annual Hawaii International Conference on System Sciences, pp. 1716-1725, January 3-7, 2017.
- S. Katragadda, **R. Benton**, S. Virani, and V. Raghavan, "Detection of Event Onset using Twitter", in IEEE International Joint Conference on Neural Networks, Vancouver, Canada, 1539-1546, July 24-29, 2016.
- S. Katragadda, H. Karnati, M. Pusala, V. Raghavan, and **R. Benton**, "Detecting Adverse Drug Effects Using Link Classification on Twitter Data", IEEE International Conference on Bioinformatics and Biomedicine, Washington D.C., 675-679, November 9-12, 2015.
- S. Hsu, **R. Benton**, and R. Gottumukkala, "Real-Time Flu Monitoring System and Decision Informatics", in *Hawaii International Conference on System Sciences*, Kauai, Hawaii, pp. 2794-2803, January 5-8, 2015.

- T. Johnsten, S. Alihamad, A. Kannalath, and **R. G. Benton**, “Targeted Action Rule Discovery”, in International Conference on Machine Learning and Applications, Miami, Florida, 348-353, December 4-7, 2013.
- J. Lavergne, **R. Benton**, and V. V. Raghavan, "DynTARM: An In-Memory Data Structure for Targeted Strong and Rare Association Rule Mining Over Time-Varying Domains", in IEEE/WIC/ACM International Conference on Web Mining, Atlanta, Georgia, pp. 298-306, November 17-20, 2013.
- **R. G. Benton**, S. Choubey, D. G. Clark, T. Johnsten, and V. V. Raghavan, "Diagnosis and Grading of Alzheimer's Disease via Automatic Classification of FDG-PET Scans", in International Conference on Brain and Health Informatics, Maebashi, Japan, pp. 266-276, October 29-31, 2013.
- M. S. Ayhan, **R. G. Benton**, V. V. Raghavan, and S. Choubey, "Composite Kernels for Automatic Relevance Determination in Computerized Diagnosis of Alzheimer's Disease", in International Conference on Brain and Health Informatics, Maebashi, Japan, pp. 126-137, October 29-31, 2013.
- J. Lavergne, **R. Benton**, and V. V. Raghavan, "TRARM-RelSup: Targeted Rare Association Rule Mining Using Itemset Trees and the Relative Support Measure", in 20th International Symposium on Methodologies for Intelligent Systems, Vancouver, Canada, Macau, pp. 61-70, December 4-7, 2012.
- J. Lavergne, **R. Benton**, and V. V. Raghavan, "Min-Max Itemset Trees for Dense and Categorical Datasets", in 20th International Symposium on Methodologies for Intelligent Systems, Vancouver, Canada, Macau, pp 51-60, December 4-7, 2012.
- M. S. Ayhan, **R. G. Benton**, V. V. Raghavan, and S. Choubey, "Utilization of Domain-Knowledge for Simplicity and Comprehensibility in Predictive Modeling of Alzheimer's Disease", in International Workshop on Multiscale Biomedical Imaging Analysis, held in conjunction with IEEE International Conference on Bioinformatics and Biomedicine, Philadelphia, Pennsylvania, pp. 265 - 272, October 4-7, 2012.
- D. Difallah, **R. G. Benton**, T. Johnsten and V. Raghavan, "FAARM: Frequent Association Action Rules Mining Using FP-Tree", in Workshop on Domain Driven Data Mining, part of 11th IEEE International Conference on Data Mining Workshops, Vancouver, Canada, pp. 398-404, December 11, 2011.
- G.-L. Feng, I. Jangjaimon and **R. Benton**, “A Class of Wireless Network Coding Schemes”, IEEE International Conference on Electro/Information Technology, Mankato, Minnesota, 6 pages, May 15-17, 2011
- C. Akkoç, T. Johnsten and **R. Benton**, “Multi-layered Vector Spaces for Classifying and Analyzing Biological Sequences”, International Conference on Bioinformatics and Computational Biology, New Orleans, pp. 160-166, March 23-25, 2011.
- M. S. Ayhan, **R. Benton**, V. V. Raghavan, and S. Choubey, “Exploitation of 3D Stereotactic Surface Projection for Automated Classification of Alzheimer’s Disease According to Dementia Levels”, IEEE International Conference on Bioinformatics and Biomedicine, Hong Kong, pp. 516-519, December 18-21, 2010.
- B. Lemoine, S. Rayburn, **R. Benton** and ADNI, “Data Fusion and Feature Selection for Alzheimer's Diagnosis”, International Conference on Brain Informatics, Toronto, Canada, pp. 320-327, August 28-30, 2010.
- M. Prachyabrued, T. Roden, and **R. Benton**, “Procedural generation of stylized 2D maps”, Proceedings of the International Conference on Advances in Computer Entertainment Technology (ACE 2007), Salzburg, Austria, pp. 147-150, June 13-15, 2007.
- **R. Benton** and C. H. Chu, “Camera Pose Estimation by an Artificial Neural Network”, Proceedings of the 2006 International Conference on Neural Information Processing, Hong Kong, pp. 604-611, October 3-6, 2006.
- **R. Benton** and C. H. Chu, “Soft Computing Approach to Steganalysis of Digital Images”, IEEE International Conference on Information Technology: Research and Education, Hsinchu, Taiwan, pp. 105-109, June 27-30, 2005.

- S. Karnatapu, K. Ramachandran, Z. Wu, B. Shah, V. Raghavan and **R. Benton**, "Estimating Size of Search Engines in an Uncooperative Environment", Proceedings of the 2nd International Workshop on Web-based Support Systems, Beijing, China, pp. 81-87, September 20, 2004.
- **R. Benton**, M. Kubat, and R. Loganantharaj, "Meta-Classifiers and Selective Superiority", Proceedings of the 13th International Conference on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems, New Orleans, Louisiana, pp. 434-442, June 19-22, 2000.
- R. Loganantharaj and **R. Benton**, "Automatic Discovery of Clusters", Proceedings of the ISCA 8th International Conference on Intelligent Systems, Denver, Colorado, pp. 45-48, June 24-26, 1999.
- N. Pissinou, **R. Benton**, B. Bhagyavati, and S. Kurkovsky, "A Roadmap to the Utilization of Intelligent Information Agents: Are Intelligent Agents the link between the Database and Artificial Intelligence Communities?", Proceedings of the 1997 IEEE Knowledge & Data Engineering Exchange Workshop, Newport Beach, California, pp. 196-205, pp. 196-205, November 4, 1997.
- **R. Benton**, A. Ganjoo, B. Lumetta, D. Spillman, and J. Ring, "Adaptive Wavelet Transforms of Singular and Chaotic Signals", Proceedings of the SPIE Wavelet Applications III, Orlando, Florida, pp. 136-143, April 8-12, 1996.
- **R. Benton**, "Using Genetic Algorithms to Improve Interpretation of Satellite Data", Proceedings of the 33rd Annual ACM Southeast Conference, Clemson University, South Carolina, pp. 143-145, March 17-18, 1995.

Refereed Posters/Abstracts

- E. Harshany, **R. Benton**, D. Bourrie, and W. Glisson, "Big Data Forensics: Hadoop 3.2.0 Reconstruction", Digital Forensics Research Workshop EU, Virtual (due to COVID), 2 pages, June 3-5, 2020.
- A. Segev, R. Datta, **R. Benton**, and D. Curtis, "OINNIONN - Outward Inward Neural Network and Inward Outward Neural Network Evolution", Genetic and Evolutionary Computation Conference Companion, Prague, Czech Republic, pp. 79-80, July 13-17, 2019.
- M. N. Gillespie, V. M. Pastukh, R. J. Langley, D. Roveda, V. King, J. Roberts, J. Johnsten, **R. Benton**, G. Daly, B. Wang, D. Vera, and H. Bass, "Mutational Artifacts Are Introduced in DNA Regulatory Regions by Oxidative Base Damage Associated with Hypoxic Signaling: Implications for Accurate Identification of Sequence Variants", American Thoracic Society International Conference, pp. A2493, May 19-24, 2017.
- M. S. Ayhan, **R. Benton**, V. V. Raghavan, and S. Choubey, "Determining Relevant Features Based on 3D Stereotactic Surface Projection to Detect Dementia Caused by Alzheimer's Disease", 7th Annual Biotechnology and Bioinformatics Symposium, Lafayette, Louisiana, pp. 91-92, October 14-15, 2010.

Technical Reports

- V. Raghavan, **R. Benton**, H. Chu, T. Johnston, and S. Choubey, "Patient Early Health Prediction: Data-driven Prognosis of Alzheimer's Disease", GE Healthcare, 35 pages, January 12, 2009.

Invited Presentations:

- "Research in Data Mining", CSC108: Intro to Computer Science, Mar 30, 2020.
- "Why Cyber Security/Digital Forensics is Interesting from a Machine Learning Perspective?", IEEE Technical Meeting, IEEE Mobile Section, Feb 26, 2020
- "Enabling Performance and Forensic Analysis of Distributed Machine Learning Environments", Cyber Forensics Intelligence Center, Sam Houston State University, Oct 21, 2019.
- "Computing", George County High School, Mar 15, 2019.
- "Research in Data Mining", CSC108: Intro to Computer Science, Feb 5, 2019.
- "Research in Data Mining", CSC108: Intro to Computer Science, Sep 24, 2018.
- "Real-Time Event Detection Using Multiple Social Media Sources", Software Protection and Exploitation Research Group, University of South Alabama, Feb 15, 2017.
- "Framework for Real-Time Event Detection Using Multiple Social Media Sources", Software Protection and Exploitation Research Group, University of South Alabama, Jan 20, 2017.

- "Exploiting Multi-Layered Vector Spaces for Malware Detection", with Jeffrey T. McDonald, Digital Forensics Research Group, University of South Alabama, Sep 14, 2016. Lightening talk (10 minutes).
- "Virtual Machine Analysis", Digital Forensics Research Group, University of South Alabama, Sep 14, 2016. Lightening talk (10 minutes).
- "Developing Cyber Threat Analysis Visualization Solutions in Cloud Environments", Digital Forensics Research Group, University of South Alabama, Sep 7, 2016. Lightening talk (10 minutes).
- "Social Media: Data Into Knowledge", Digital Forensics Research Group, University of South Alabama, February 12, 2016.
- "Steganalysis: Detecting Hidden Messages", Digital Forensics Research Group, University of South Alabama, October 16, 2015.
- "Development of a Mutation Correlation Engine (MuCE) and its application to breast cancer genomes to determine mutational relationships/Automatic Cell Tracking and Anomaly Detection", by Tom Johnsten (lead) and Ryan Benton, Mitchell Cancer Institute, University of South Alabama, October 6, 2015
- "Discovery in a Research Portfolio: Experiences in Analyzing the National Science Foundation Proposals", IEEE Lafayette Section, April 22, 2014.
- "Toward Computer-Aided Diagnosis of Alzheimer's Disease", UL Lafayette, Louis Stokes-Louisiana Alliance for Minority Participation, November 7, 2013.
- "Representations for Large-scale Sequence Data Mining: A Tale of Two Vector Space Models", UL Lafayette, CACS Weekly Colloquium, October 4, 2013.
- "University of Louisiana at Lafayette Data Mining Research", University of South Alabama, April 12, 2013.
- "Multi-Layered Vector Spaces", UL Lafayette, CACS Weekly Colloquium, March 8, 2013.
- "Analyzing and Visualizing Research Portfolios", UL Lafayette, CACS Weekly Colloquium, March 11, 2011.
- "Towards Computer-Aided Diagnosis of Alzheimer's Disease", IEEE Lafayette Section, January 27, 2011.
- "In Pursuit of Data-Driven Prediction of Alzheimer's Disease", University of South Alabama, Invited Speaker by Student Chapter of the ACM, October 2, 2009.
    - Similar presentation at UL Lafayette, CACS Weekly Colloquium, September 25, 2009
- "Knowledge Discovery in Digital Media", University of South Alabama, Guest Lecture, October 1, 2009.
- "Automatic Annotation of Satellite Imagery", UL Lafayette, CACS Weekly Colloquium, September 7, 2007.
- "Steganalysis (Detecting Hidden Messages)", UL Lafayette, CACS Weekly Colloquium, March 3, 2006.

Exhibit:

- K. Smith, J. DeRouen, **R. Benton**, S. Katragadda, and S. Virani, Lecture/Display, "For sale: grazing pasture, under water", by UL Lafayette Coastal Community Resilience Studio and Center for Advanced Computer Studies, at the UL Lafayette ArTech Fusion, Lafayette, Louisiana, USA. (March 14, 2014). In the spirit of the legend of Ernest Hemingway's 6 word short story, this project places terse and poignant narratives of land use and loss, restoration and adaptation, attachment to community, resilience, and personal identity along the Chenier Plain of coastal Louisiana. The stories are stored as points on a web-based map; with the stories appearing and disappearing on the map as the user moves the mouse over the points. The system was shown for 3 ½ hours, while a short audio/visual presentation was given (10 minutes).

Dissertation/Thesis Committee Chair

Doctoral

- Edward Harshany, "Distributed File System Digital Forensic Triage Integration", Computing (2020)
- Scott Brown, "Local Model Feature Transformations", Computing (2020)
- Thomas Watts, "Visualization of Orchestrated Containerized Workloads", Computing (2020)

Master

- Alec Austin, "Sub-Ensemble Learning for the Handling of Missing Classifier Ensemble Members", Computer and Information Sciences, Computer Science Specialization (2020)
- Ho Yin Chan, "Mining Discriminative Patterns Using Self Organized Networks", Computer and Information Sciences, Computer Science Specialization (2020)
- Robert Cox, "Android Malware Classification Through Static Global Feature Analysis", Computer and Information Sciences, Computer Science Specialization (*in progress*)
- Blake Johns, "Rare Action Rule Exploration (RARE)", Computer and Information Sciences, Computer Science Specialization (*in progress*)
- Lowell Crook, "Query Driven Association Action Rule Mining", Computer and Information Sciences, Computer Science Specialization (2019)
- Jay Lewis, "Itemset Tree Enhancement", Computer and Information Sciences, Computer Science Specialization (2016)

Project Chair

Master

- Timothy Sullivan, "Visualization-based VMDK Integrity Checking", Computer and Information Sciences, Computer Science Specialization (2019)
- Zachary Denton, "Dynamic Action Rule Mining", Computer and Information Sciences, Computer Science Specialization (2018)

Dissertation/Thesis Committee Membership

Doctoral

- Mohan Vamsi Kasukurthi, "Transcriptomic Calculus: A Novel Computational Theory For Interpretation And Analysis of Next- Generation Sequencing Data", Computing (*in progress*)
- Aleise McGowan, "Prediction of Persuasive Technology Principles to Improve Engagement in Mobile Health Applications", Computing (*in progress*)
- Daniel Miller, "Development and Analysis of Digital Forensic Methods for Additive Manufacturing Devices", Computing (*in progress*)
- Colby Parker, "Adversarial Machine Learning for the Protection of Legitimate Software", Computing (*in progress*)
- Matthew Peterson, "Detecting Selfish Mining Attacks Against a Blockchain Using Machine Learning", Computing (*in progress*)
- Shengyu Li, "Mapping Common Data Elements to the Cancer Data Standards Registry and Repository", Computing (2021)
- Stacy Miller, "Examining Engagement Behavior on Social Media Related to Fake News" , Computing (2019)
- Dustin Mink, "Indicators of Compromise for the United States Federal Aviation Administration Next Generation Air Transportation System Automatic Dependent Surveillance-Broadcast", Computing (2019)
- Patrick Luckett, "Nonlinear Methods For Detection And Prediction Of Epileptic Seizures", Computing (2018)
- Murali Pusala, "Link Discovery through Iterative Link Classification - Towards a Real-Time Analysis of Graph Evolution", Computer Science (2018)
- Satya Katragadda, "A Framework for Real Time Event Detection for Emergency Situations Using Social Media Streams", Computer Science (2016)
- Elshaimaa Ali, "A Framework for Building Light Weight Ontologies Based on Semi-structured Data for Semantic Annotation", Computer Science (2015)

- Mohammad Amir Sharif, “Large-Scale, Hybrid Approaches for Recommending Pages Based on User’s Previous Click Patterns and Content”, Computer Science (2015)
- Jennifer Lavergne, “Dynamic Targeted Data Mining”, Computer Science (2013)
- Nicholas Ruiz, “Statistical Parsing and Integration of Result Records for Answering Factual Questions”, Computer Science (2011)

Master Thesis

- Minday Wongsa, "Identifying Text File Similarities in Forensic Disk Images Using Fuzzy Logic", Computer and Information Sciences, Information Systems Specialization (in progress)
- Brittney Booker, “Data Carving Against Known File Obfuscation Techniques: A Proposed Data Carving Algorithm”, Computer and Information Sciences, Information Sciences Specialization (2021)
- Wyatt L. Green, “Parallelized Cell-Based Outlier Detection for Data Streams”, Computer and Information Sciences, Computer Science Specialization (2021)
- Ryan Odeneal, “The Structure of K_n-Free Graphs”, Mathematics (2021)
- Austin Sanders, “An Empirical Test of a Framework for Casual Eating Behavior”, Computer and Information Sciences, Information Sciences Specialization (2021)
- Adam Gautier, “Hardware-Based Intrusion Detection Using Thermal Side-Channels”, Computer and Information Sciences, Computer Science Specialization (2020)
- Nathan Herron, “Android Malware Detection Using Machine Learning Algorithms”, Computer and Information Sciences, Computer Science Specialization (2020)
- Adam Minor, “Android Malware Detection Using Textural Feature Recognition of Visualized Binary”, Computer and Information Sciences, Computer Science Specialization (2019)
- Grant Daly, “Application of Multi-Objective Evolutionary Algorithms to Action Rule Mining”, Computer and Information Sciences, Computer Science Specialization (2018), Co-Chair
- Colby Parker, "Android Malware Detection Using Step-Size Based Mutil-Layered Vector Space Models", Computer and Information Sciences, Computer Science Specialization (2018)
- Rafi Qumsieh, “Synthesizing Additional Training Data To Increase The Classification Accuracy of Visual Data Using Feed-Forward Neural Networks on Small Datasets”, Mathematics (2017)
- Subasish Das, "Evaluating safety improvement from edge lines on rural two-lane highways", Civil Engineering (2012)
- Long Li, “Louisiana Urban and Suburban Roadway Safety Study: Application of 1st Edition of Highway Safety Manual”, Civil Engineering (2011)
- Kaushik Das, “Investigation of Menu Properties and Pointing Techniques in a Projection-based VR Environment, Computer Science (2010)
- Tejas Nomulwar, “Web Personalization Using Wikipedia”, Computer Science (2010)
- Vertie Louise Jordan, “Safety Performance of Horizontal Curves on Rural Two-Lane Highways”, Civil Engineering (2008)

Project Committee Member

Master Project

- Mohan Vamsi Kasukurthi, “OmniSearch: Ontology-based Semantic Search System for microRNA Research”, Computer and Information Sciences, Computer Science Specialization (2017)