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Associate Professor, Software Engineering
U.A. Whitaker College of Engineering
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EDUCATION

University of Central Florida (UCF), Orlando, FL, USA

Doctor of Philosophy in Computer Engineering (GPA: 3.94) *August 2009*

Focus: *Distributed Data Mining for Large Mixed-Type Attribute Data Sets*

Advisor: Dr. M. Georgiopoulos

Master of Science in Computer Engineering

December 2000

Thesis Topic: “*Cross validation in Fuzzy ARTMAP for large databases*”

Advisor: Dr. M. Georgiopoulos

Athens University of Economics and Business (AUEB), Athens, Greece

Bachelor of Science in Computer Science/Informatics *December 1997*

RESEARCH INTERESTS

Machine Learning, Deep Learning, NLP, Text Mining, Big Data, Anomaly Detection,
Distributed Data Mining, Frequent Itemset Mining, Mining of Mixed-Attribute Data Sets.

ACADEMIC EXPERIENCE

- Associate Professor – Software Engineering, U.A. Whitaker College of Engineering (WCE), Florida Gulf Coast University (FGCU) (8/2016 – Present)
- Assistant Professor – Software Engineering, WCE, FGCU (8/2009 – 8/2016)

RESEARCH AND PROFESSIONAL EXPERIENCE

- **Summer Research Faculty – Oak Ridge National Lab (ORNL), TN (6/2018 – 8/2018)**
Collaborated with researchers at the *Biomedical Science and Engineering Center (BSEC)* at ORNL during a 10-week faculty fellowship appointment. Experimented with Deep Learning and Natural Language Processing (NLP) techniques towards understanding text in medical reports. Focused on enhancing the ability of state-of-the-art neural network models (CNNs, RNNs, Attention) to correctly predict the particular cancer category for cancer pathology reports. Developed software using word embeddings, python, scikit-learn, and TensorFlow.
- **Research Assistant – Machine Learning Lab (ML²), UCF, Orlando, FL (1/2004 – 6/2009)**
Applied Machine Learning techniques to Law Enforcement data for FINDER (<http://finder.ucf.edu>), a joint venture by Engineering and Criminal Justice departments at UCF and FL law enforcement agencies, funded by National Institute of Justice (NIJ). Implemented Machine Learning algorithms

(Frequent Itemset Mining, Anomaly Detection, using Rational Rose, C++/STL, Blitz, Boost, CPPUnit, Matlab). Led several students experimenting with Machine Learning & Data Mining algorithms under National Science Foundation (NSF) grants, including REU program (<http://www.amalthea-reu.org>) resulting in peer-reviewed conference papers. Worked as primary assistant in preparation of several proposals that brought prestigious and substantial awards to the lab.

- **Software Engineer – LaserSight Technologies, Winter Park, FL (4/2001 – 12/2003)**
Led activities within all phases of software development life cycle from requirements and risk analyses to design, implementation and testing of a laser refractive product and an ophthalmic diagnostic medical device; ensured compliance with regulatory requirements and company Standard Operating Procedures. Designed, implemented, and maintained protocols for integration and regression testing, as well as verification and validation activities.
- **Research Assistant – Department of ECE, UCF, Orlando, FL (8/1998 – 12/2000)**
Conducted research for several departments and projects, including soil moisture estimation project; technologies included neural networks, image processing for remote-sensing satellite data.
- **Software Developer – Athens Univ. of Economics & Business, Greece (9/1997 – 6/1998)**
Designed and implemented the Graphical User Interface (Visual C++) for airport statistics tool funded by European Committee and undertaken by numerous private sectors in Europe.

PUBLICATIONS

Refereed Conferences

- [C1] **A. Koufakou**, E. Pamungkas, V., Basile, & V., Patti. “HurtBERT: Incorporating Lexical Features with BERT for the Detection of Abusive Language”. *Proceedings of the Fourth Workshop on Online Abuse and Harms at EMNLP*, Virtual due to covid-19, November 2020.
- [C2] F. Pierre, F. Zhao, **A. Koufakou**, “Learning Programming in Virtual Reality Environments”, *Int’l Conference on Human-Computer Interaction*, Virtual due to covid-19, July 2020.
- [C3] **A. Koufakou**, V., Basile, & V., Patti. “Florunito@ trac-2: Retrofitting word embeddings on an abusive lexicon for aggressive language detection”, *Proceedings of the Second Workshop on Trolling, Aggression and Cyberbullying at LREC*, Virtual due to covid-19, May 2020.
- [C4] **A. Koufakou**, J. Scott, “Lexicon-Enhancement of Embedding-based Approaches Towards the Detection of Abusive Language”, *Proceedings of the Second Workshop on Trolling, Aggression and Cyberbullying at LREC*, Virtual due to covid-19, May 2020.
- [C5] **A. Koufakou**, J. Scott, “Exploring the Use of Lexicons to aid Deep Learning towards the Detection of Abusive Language”, *Association for Computational Linguistics ACL Workshop on Widening NLP WiNLP*, Florence, Italy, July 2019.
- [C6] D. Guo, **A. Koufakou**, “A Comprehensive and Hands-on Undergraduate Course on Cloud Computing”, *2018 American Society of Engineering Education ASEE-Southeastern Conference*, Daytona, FL, March 2018.

- [C7] D. Guo, **A. Koufakou**, “How Cloud Computing is addressed for Software Development in Computer Science Education”, *HCI International*, Vancouver, Canada, July 2017.
- [C8] **A. Koufakou**, J. Gosselin, D. Guo, “Using Data Mining to Extract Knowledge from Student Evaluation Comments in Undergraduate Courses”, *International Joint Conference on Neural Networks IJCNN*, Vancouver, Canada, 2016.
- [C9] D. Guo, **A. Koufakou**, “A Certification-Guided Course for Cloud Computing”, *ACM SIGCSE 2016*, Memphis, TN, 2016.
- [C10] **A. Koufakou**, “Introducing Software Specifications to an Undergraduate Software Engineering Program”, *American Society of Engineering Education ASEE 2015*, Seattle, WA, 2015.
- [C11] **A. Koufakou**, “Developing and Teaching a Hybrid Software Engineering Introductory Course”, *American Society of Engineering Education ASEE-Southeastern Conference 2015*, Gainesville, FL, 2015.
- [C12] J. Cuiffi, C. Mitchell, **A. Koufakou**, J. Simmons, “Improved Solar Cell Temperature Modeling for Weather to Power Forecasting”, *Solar 2015*, Pennsylvania State University, State College, PA, 2015.
- [C13] L. Nguyen, **A. Koufakou**, C. Mitchell, “A Smart Mobile App for Site Inspection and Documentation”, *International Construction Specialty Conference ICSC*, Vancouver, Canada, 2015.
- [C14] **A. Koufakou**, D. Guo, “Developing and Using an in-house Plugin for Easy Social Network Programming”, *ACM SIGCSE 2014*, Atlanta, GA, 2014.
- [C15] **A. Koufakou**, P. Ragothaman, “Mining Non-Derivable Hypercliques”, *IEEE Int’l Conference on Tools with Artificial Intelligence ICTAI*, B. Raton, FL, 2011.
- [C16] **A. Koufakou**, J. Secretan, M. Fox, G. Gramajo, G.C. Anagnostopoulos, M. Georgiopoulos, “Outlier Detection for Large High-Dimensional Categorical Data using Non-Derivable and Non-Almost-Derivable Sets”, *WORLDCOMP Int’l Conf. on Data Mining DMIN*, L. Vegas, NV, 2009.
- [C17] J. Secretan, **A. Koufakou**, M. Georgiopoulos, “A Practical Architecture for High-Performance, Privacy-Preserving Data Mining”, *WORLDCOMP Int’l Conf. on Data Mining DMIN*, L. Vegas, NV, 2009.
- [C18] M. Georgiopoulos, C. Young, C. Geiger, S. Hagen, C. Parkinson, A. Morrison-Shetlar, T. Crouse, P. Krist, P. Lancey, M. Falls, P. Ramsey, D. Forde, **A. Koufakou**, “Progress of the EXCEL Program at the University of Central Florida: An NSF STEP Funded Project”, *ASEE Mathematics Division*, Austin, TX, 2009.
- [C19] **A. Koufakou**, M. Georgiopoulos, G. Anagnostopoulos, “Detecting Outliers in High-Dimensional Datasets with Mixed Attributes,” *WORLDCOMP Int’l Conference on Data Mining (DMIN 2008)*, L. Vegas, NV, 2008.
- [C20] **A. Koufakou**, J. Secretan, J. Reeder, K. Cardona, M. Georgiopoulos, “Fast Parallel Outlier Detection for Categorical Datasets using MapReduce”, *2008 IEEE World Congress on Computational Intelligence WCCI*, Hong Kong, 2008.

- [C21] **A. Koufakou**, E. Ortiz, M. Georgiopoulos, G. Anagnostopoulos, K. Reynolds, “A Scalable and Efficient Outlier Detection Strategy for Categorical Data”, *IEEE Int’l Conference on Tools with Artificial Intelligence ICTAI*, Patras, Greece, 2007.
- [C22] O. Kursun, **A. Koufakou**, B. Chen, M. Georgiopoulos, K. Reynolds, R. Eaglin, “A Dictionary-Based Approach to Fast and Accurate Name Matching in Large Law Enforcement Databases”, *IEEE Intelligence and Security Informatics Conference ISI*, San Diego, CA, pp. 72-82, 2006.
- [C23] **A. Koufakou**, N. Weihs, M. Georgiopoulos, A. Al-Daraiseh, “Comparisons of Gaussian ARTMAP and Distributed Gaussian ARTMAP Classifiers - The Category Proliferation Problem”, *Artificial Neural Networks in Engineering (ANNIE)*, St. Louis, MI, 2006.
- [C24] **A. Koufakou**, A. Wakchaure, O. Kursun, M. Georgiopoulos, K. Reynolds, and R. Eaglin, “Burglary data mining - A three tiered approach: Local state and nation-wide,” *GIS Symposium*, Troy, AL, 2005.
- [C25] M. Georgiopoulos, **A. Koufakou**, G. Anagnostopoulos, and T. Kasparis, “Over-training in Fuzzy ARTMAP: Myth or Reality?”, *IEEE International Joint Conference on Neural Networks IJCNN*, Washington, DC, 2001.
- [C26] M. Georgiopoulos, **A. Koufakou**, G. Anagnostopoulos, and T. Kasparis, “Cross-validation in Fuzzy ARTMAP neural networks for large sample classification problems”, *SPIE Conf. on Applications & Science of Computational Intelligence*, Orlando, FL, 2001.

Refereed Journals

- [J1] **A. Koufakou**, “An Approximate Representation of Hypercliques”, *Journal of Intelligent Information Systems*, 48(2), pp. 263-285, **2017**.
- [J2] **A. Koufakou**, “Mining Non-Derivable Hypercliques”, *Knowledge & Information Systems*, 41(1), pp. 77-99, **2014**.
- [J3] **A. Koufakou**, J. Secretan, M. Georgiopoulos, “Non-Derivable Itemsets for Fast Outlier Detection in Large High-Dimensional Categorical Data”, *Knowledge & Information Systems*, 29(3), pp. 697-725, **2011**.
- [J4] J. Secretan, M. Georgiopoulos, **A. Koufakou**, and K. Cardona, “APHID: An Architecture for Private, High-performance Integrated Data Mining,” *Future Generation Computer Systems*, 26(7), pp. 891-904, **2010**.
- [J5] **A. Koufakou**, and M. Georgiopoulos, “A Fast Outlier Detection Strategy for Distributed High-Dimensional Data Sets with Mixed Attributes”, *Data Mining & Knowledge Discovery Journal*, 20(2), pp. 259-289, **2010**.
- [J6] O. Kursun, **A. Koufakou**, A. Wakchaure, M. Georgiopoulos, K. Reynolds, R. Eaglin, “Searching Very Large Databases by a Novel Name-Matching Approach Based on Prefix-Dictionary”, *Int’l Journal of AI Tools*, 15 (5), pp. 839-848, **2006**.
- [J7] **A. Koufakou**, M. Georgiopoulos, G. Anagnostopoulos, T. Kasparis, “Cross-Validation in Fuzzy ARTMAP for Large Databases”, *Neural Networks*, 14(9), pp. 1279-1291, **2001**.

PRESENTATIONS & TALKS

- “Text Mining and Sentiment Analysis for Student Course Reviews”, poster presentation, Women in Machine Learning Workshop WiML at *NeurIPS*, Montreal, Canada, 2018.
- “Expert Panel on Hiring Tech Talent”, panel lecture with about 70 attendees, Southwest Florida Regional Technology Partnership, Fort Myers, FL, 2017.
- “Computers That Think: Artificial Intelligence” lecture with about 60 attendees, Big Arts, Sanibel, FL, 2016.
- “Cross-Cultural Communication Challenges Faced by Women in Computing”, Grace Hopper Celebration for Women in Computing, Tucson, AZ, 2009.

FUNDING & AWARDS

- FGCU Sabbatical Leave Award (only 3 awarded annually at University), Spring 2020.
- Google Cloud Research Credits Grant (2019, \$5,000).
- Co-PI for FGCU “Faculty Scholarship Enhancement Initiative” research grant, proposal titled “The Interdependencies of Regional Infrastructure Lifelines under the Impact of Hurricanes” (2019, award amount: \$18,500).
- FGCU Professional Development Enhancement Award (Spring 2019, \$1,000).
- Higher Education Research Experience (HERE) Faculty Fellowship at ORNL National Lab (Oak Ridge, TN, 2018).
- “Best Undergraduate Student Engineering Research” at FGCU Research Day (2018).
- Awards from the “Computing Research Association Committee on the Status of Women in Computing Research” (CRA-W) to attend the “Mid-Career Mentoring Workshop”. (Washington, DC, 2016) and the “Managing the Academic Career for Women Faculty in Undergraduate Computing Programs” Workshop (SIGCSE, Denver, CO, 2013).
- FGCU Faculty Senate Professional Development Fund Grant (2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019).
- FGCU Lucas Center Faculty Travel Award to Enhance Higher Education Pedagogy (2014).
- “Best Student Paper” at WORLDCOMP Int’l Conference on Data Mining DMIN (Las Vegas, NV, 2009).
- USENIX grant for *Symposium on Operating Systems Design and Implementation OSDI and Diversity Workshop* (San Diego, CA, 2008).
- IEEE Grant for *2008 Grace Hopper Celebration of Women in Computing* (Keystone, CO, 2008).
- Second place at the 2007 UCF Showcase of Undergraduate Research Excellence (field of Engineering, Computer Science, and Optics) as Mentor of Enrique Ortiz.

COURSES TAUGHT (FGCU)

- Intro to Computer Science (COP 1500)
- Introduction to Programming (COP 2006)
- Data Structures & Algorithms (COP 3530)
- Computer Architecture (CDA 4150)
- Intelligent Systems (COP 4931)

- Knowledge Discovery & Data Mining (CEN 4930, later CAP 4770)
- Software Engineering Fundamentals (CEN 3031)
- Software Specifications (CEN 3073)
- Independent Study, Example Topics: Software Development for Construction Defects, Solar Data Mining, Deep Learning for Text Mining & Understanding

SERVICE

Department

- Lead, FGCU Software Engineering Curriculum Design and Accreditation committee; also assisted interim SE chair with SE curriculum, scheduling, and senior surveys, 2018-19.
- Collaborated with FGCU Computer Science faculty to organize curriculum, plans, and assessment for new B.Sc. degree in Software Engineering (approved, started Fall 2011) and to obtain ABET accreditation for the SE program (granted 2015)
- Mentored FGCU CS & SE students on registration, coursework, and career plans (2010-present, currently mentoring 50+ students)
- Served in Software Engineering Faculty Search Committees (2013, successful; 2015, successful; 2020 ongoing)
- Served in SE Chair Search Committee (2018, successful)
- Served as the Computer Science (CS) Club faculty advisor (2013-2018)
- Visited classes for teaching observation (2019)

College

- WCE Curriculum Committee (2018-present)
- WCE Peer Review Committee (2016-2018)
- WCE Graduate Committee (2010-2014)
- WCE Recruitment and Retention Committee (2009-2014)
- Judge for FGCU Research Day (2012, 2014, 2018)
- WCE College Marshall (2013 December commencement)

University

- Faculty Senate (2017-2019)
- Faculty Senate Technology Team (2012-Present)
- University Undergraduate Curriculum Committee (2013-2017)
- Academic Integrity Committee (2016-2018)

Outreach

- Served as a judge at the 2018 Hertz Hackathon (Estero, FL, 2018)
- Spoke at the Southwest Florida Regional Technology Partnership Expert Panel on Hiring Tech Talent in Fort Myers, FL (about 70 attendees, 2017)
- Designed, developed and gave lecture titled “Computers That Think: Artificial Intelligence” at the Big Arts, Sanibel, FL (about 60 attendees, 2016)

- Organized, developed, and conducted a half-day activity titled “Computer Science and Solving Complex Problems” attended by about 90 middle school girls during FGCU Whitaker Girls in Engineering, Math, and Science GEMS Event (2014)
- Co-organized and spoke in panel session titled “Cross-Cultural Communication Challenges Faced by Women in Computing”, Grace Hopper Celebration for Women in Computing (Tucson, AZ, 2009)
- Gave Computer Science and Software Engineering talk to introductory class at Edison College, Ft Myers, FL (April 2014)
- As member of FGCU WCE Recruitment and Retention Committee, assisted in establishing and actively participated in the first WCE “Women’s Weekend” events and “First Friday” event for middle and high school students (2010-present)
- Actively participated and presented in FGCU Eagle Expo (several, during 2009-2018)
- Attended Southwest Florida Regional Technology Partnership Awards (2011, 2015) and TECHmatch networking events (2011, 2013)
- Volunteer: 2008 Grace Hopper Celebration for Women in Computing (Keystone, CO); 2007 IEEE-INNS International Joint Conference on Neural Networks (Orlando, FL)

Reviewer

- Women in Machine Learning WiML Workshop @ NeurIPS
- ACL Widening NLP WiNLP Workshop @ ACL
- ACM SIGCSE Technical Symposium
- ACM Computing Surveys
- ACM Transactions on Computing Education (TOCE) Journal
- IEEE Transactions on Knowledge & Data Engineering (TKDE) Journal
- IEEE Transactions on Cybernetics
- IEEE Transactions on Systems, Man and Cybernetics
- Knowledge & Information Systems (KAIS) Journal