

Luke M. Guerdan CV

+ 1 (314) 239-6711 – lguerdan97@gmail.com – lukeguerdan.com

Education

MPhil in Advanced Computer Science | University of Cambridge | October 2020–June 2021

Thesis Advisor: Dr. Hatice Gunes

Modules: Principles of Machine Learning Systems, Digital Signal Processing, Mobile Robot Systems, Affective Computing, Mobile Systems and Mobile Data Machine Learning

B.S. in Computer Science, Psychology | University of Missouri - Columbia | Aug 2015–Dec 2019

GPA: 4.0/4.0

University of Missouri Honors College Member

Universidad de Alicante Study Abroad Program | Spring 2018 | Spanish Conversational Fluency (B2)

Research & Professional Experience

Co-founder | TigerAware, LLC | Dec 2018–Oct 2020 | Columbia, Missouri | TigerAware.com

Developed mobile data collection platform used by 2500+ research participants in 6+ federally funded studies examining substance abuse, drinking and driving, and racial discrimination.

Founded technology company actively licensing the platform to research groups across the country.

Research Assistant | University of Missouri - Columbia | Aug 2015–Dec 2019 | Columbia, Missouri

Conducted research in machine learning for behavior analysis under Dr. Yi Shang. Led a team of five undergraduate and graduate students developing a method for predicting fluid intelligence from brain scans and worked with other teams to develop alcohol use and sales call success prediction pipelines. Research work featured in five MU Engineering News releases.

Research Assistant | NSF REU in Big Data Analytics | May–Aug 2019 | St. Louis, MO | [Slides](#), [Poster](#)

Developed dynamic matching algorithms for homelessness reduction under Dr. Chien-Ju Ho at Washington University in St. Louis. Used linear programming techniques to develop an online matching algorithm that pairs dynamically arriving agents with housing interventions.

Honors Psychology Capstone Program | Aug 2018–May 2019 | PI: Dr. Steven Hackley | [Thesis](#)

Designed and conducted a study examining storage of unconsciously perceived information in working memory. Used continuous flash suppression paradigm to suppress items from awareness and tested whether suppressed items occupy visual working memory capacity.

Research Assistant | Berlin Institute of Technology | May–Aug 2018 | Berlin, Germany

Developed supervised machine learning techniques for predicting body kinematics from electroencephalogram (EEG) recordings. Presented work at German news networks, the DAAD RISE Intern Summit, and IEEE Conference on Neural Engineering (NER).

Software Engineering Intern | Environmental Systems Research Institute | May–Aug 2017 | Redlands, California

Performed C++ software development and optimized geospatial database queries to reduce performance bottlenecks. Developed virtual reality-based climate change visualization tool, which received 2nd place among fifteen teams in an internship hackathon.

Research Assistant | NSF REU in Networking Technologies | May–Aug 2016 | Columbia, Missouri

Developed an offline disaster management framework for improving emergency responses under Dr. Prasad Calyam. Field tests with the leading Missouri disaster response team indicated platform cuts emergency response time in half. Presented results to state legislators and funding donors.

Publications

(* denotes equal contribution; preprint pdfs available [here](#))

- K. Park, K. Meiss, **L. Guerdan**, E. Cheng, J. Burchard, J. Gillis, D. Weber, P. Calyam, and S. Ahmad, "Real-time geotracking and cataloging of mass casualty incident markers in a search and rescue training simulation: Pilot study," *American Journal of Disaster Medicine*, vol. 14, no. 2, pp. 89-95, 2019.
- **L. Guerdan***, P. Sun*, C. Rowland, L. Harrison, Z. Tang, N. Wergeles, and Y. Shang, "Deep Learning vs. Classical Machine Learning: A Comparison of Methods for Fluid Intelligence Prediction," in *Challenge in Adolescent Brain Cognitive Development Neurocognitive Prediction*, 2019: Springer, pp. 17-25.
- L. Gehrke*, **L. Guerdan***, and K. Gramman, "Extracting Motion-Related Subspaces from EEG in Mobile Brain/Body Imaging Studies," in *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)*, 2019: IEEE, pp. 344-347.
- W. Morrison, **L. Guerdan**, J. Kanugo, T. Trull, and Y. Shang, "Tigeraware: An innovative mobile survey and sensor data collection and analytics system," in *2018 IEEE Third International Conference on Data Science in Cyberspace (DSC)*, 2018: IEEE, pp. 115-122.
- **L. Guerdan**, O. Apperson, and P. Calyam, "Augmented resource allocation framework for disaster response coordination in mobile cloud environments," in *2017 5th IEEE International Conference on Mobile Cloud Computing, Services, and Engineering (MobileCloud)*, 2017: IEEE, pp. 45-52.
- P. Sun, N. Wergeles, C. Zhang, **L. Guerdan**, T. Trull, and Y. Shang, "ADA-automatic detection of alcohol usage for mobile ambulatory assessment," in *2016 IEEE International Conference on Smart Computing (SMARTCOMP)*, 2016: IEEE, pp. 1-5.

Posters & Presentations

- **L. Guerdan**, C. Ho, and S. Das, "Dynamic Matching Algorithms for Homelessness Reduction," *CSE REU Final Presentation*, 2019. [[slides](#), [poster](#)]
- **L. Guerdan**, A. Underwood, and S. Hackley, "Unconscious Information Processing in Working Memory," *Poster presented at the Midwestern Psychological Association Conference*, April 2019, Chicago, Illinois.
- **L. Guerdan**, L. Gehrke, and K. Gramman, "Extracting Motion-Related Subspaces from EEG in MOBI Studies," *Talk given at RISE Intern Summit*, July 2018, Heidelberg, Germany. [[slides](#)]
- **L. Guerdan** and P. Calyam, "Augmented Resource Allocation in Disaster Scenarios," *Poster presented at the Annual Undergraduate Research and Creative Achievements Forum*, August 2016, Columbia, MO.

Also presented at Undergraduate Research Day at the Capitol, April 2019, Jefferson City, MO.

Grants

- Robert Wood Johnson Foundation Mood Challenge Semi-Finalist (\$20,000) Spring 2016
National competition calling for proposals for ResearchKit studies that will further our understanding of mood and how it relates to our daily lives, health, and well-being.

- University of Missouri Interdisciplinary Innovations Fund Award (\$25,000) Spring 2017
The Interdisciplinary Innovations Fund provides seed money for student-centered, interdisciplinary projects that demonstrate leadership in using information technology.

Awards, Scholarships, & Fellowships

- **NSF Graduate Research Fellowship** (*on reserve; tenure starting FS 2021*) Spring 2020
- Finalist: Rhodes & Gates Cambridge Fellowships; Alternate: Churchill Fellowship Fall 2019
- University of Missouri Award for Academic Distinction Spring 2019
Awarded to top 15 of ~22,000 undergraduates for intellectual achievements.
- DAAD RISE Fellowship Summer 2018
- **Barry M. Goldwater Scholarship** in Science and Engineering Spring 2018
- Outstanding Junior in Computer Science Spring 2018
Awarded to top computer science junior as selected by department faculty.
- Garmin ECE Scholarship Spring 2017
Awarded to four EECS sophomores for academic and outreach activities.
- Outstanding Discovery Fellow Spring 2016
Awarded to two of thirty freshmen Discovery Fellows for early research contributions.

Extracurricular & Volunteer Activities

Mizzou Computing Association | President Dec 2016–Dec 2017 | Vice President Dec 2015–Dec 2016 | Machine Learning SIG Leader Aug 2018 - May 2019 | Intro to Computer Science SIG Leader Fall 2019

Revitalized student computing society, increasing membership from four to ninety-five students through weekly workshops, faculty panels, and guest lectures in computing topics. Focused activities on outreach for incoming students interested in learning computing and ML.

Major League Hacking | TigerHacks Assistant Director–Fall 2017 | Participant Aug 2015–March 2018

Organized hackathon drawing 300 attendees from around the Midwest. Also participated in seven international hackathons spanning North America and Europe, in which I developed a series of weekend projects promoting real-time mental health interventions.

Alpha Phi Omega Service Fraternity | VP of Communications–Spring 2019 | Member Aug 2018–Dec 2019

Engaged in community service projects including food pantry shelving, homeless veteran housing assistance, and non-profit fundraising. Served as 2019 East Campus Cleanup Liaison, directing a bi-weekly cleanup effort to prevent student tailgate waste from entering local waterways.

Show Me Dharma | Board Member Jan 2019–Summer 2020 | Member Fall 2015–Summer 2020

Participated in weekly meditation classes in which I discussed Buddhist topics with a group of practitioners. Later joined the board of directors to help foster participation among students.

Technical Skills

Languages: Python (NumPy, Pandas, scikit-learn, TensorFlow); MATLAB; C/C++ ; JavaScript; HTML5/CSS; MySQL

Methodologies and Tools: Git; Angular 7; UNIX; AWS; Visual Studio; RESTful APIs