Julia Lee Romero

Boulder, CO

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EDUCATION

University of Colorado Boulder — Boulder, CO
Ph.D. Student in Computer Science, GPA: 4.00/4.00 — 2020–Current

- Advised by Prof. Qin (Christine) Lv and Prof. Morteza Karimzadeh

University of Texas at Austin — Austin, TX
B.S. in Biomedical Engineering with *Highest Honors (top 10%)*, GPA: 3.73/4.00 — 2016–2020

- Certificate in Computational Sciences and Engineering

GRADUATE RESEARCH EXPERIENCE

University of Colorado Boulder, Ph.D. Research — Boulder, CO
Systems Lab, Computer Science and GeoHAI Lab, Geography — 2020–Current

- Spatiotemporal Representation Learning for Encoding Urban Neighborhoods
  Developing graph model for preserving spatial and temporal contextual information and learning urban representations. Using large heterogeneous geospatial datasets including satellite imagery, street view imagery, and human mobility. *Ongoing project.*

- Addressing wearable device data quality for remote patient monitoring
  Characterizing data quality issues, assessing downstream impacts, and developing mitigation strategies to aid the design of a quality-aware data analytics pipeline. Grant proposal writing for NSF, NIH, NCI, and internal funding. *Ongoing project.*

- Basketball activity recognition with smartwatches
  Collected and manually annotated wrist-worn accelerometer data from participants playing basketball. Validated the dataset with a deep learning activity recognition model. *Paper published.*

- Investigating physical activity during COVID-19 with wearable devices
  Utilized data from a wearable footpod company to examine behaviors of runners before and during the pandemic and in comparison to governmental pandemic policies. *Paper published.*

Nokia Bell Labs, Pervasive Systems Group — Cambridge, UK
Research Intern with Dr. Andrea Ferlini, Dr. Alessandro Montanari, and Dr. Fahim Kawsar — Summer 2023

- Measuring Clinical Respiratory Parameters with a Wearable PPG Sensor
  Completed an independent research project and generated patent ideas, supervised by a mentor. Determined the technical approach and project scope, designed a study for data collection, and finally conducted signal processing on raw photoplethysmography (PPG) sensor data in order to extract respiratory signals. My work will be submitted to ACM Hotmobile 2024, and two of my patent ideas are in the pipeline.

Stryd (Sports Technology Startup) — Boulder, CO
Data Science Intern — Summer 2022

- Predicting Injury in Runners
  Conducted data collection, cleaning, visualization on wearable fitness data. Developed analytics pipeline and machine learning models for injury prediction. The model and pipeline were deployed into the Stryd ecosystem.

Johns Hopkins Applied Physics Laboratory — Laurel, MD

Data Science Intern — Summer 2021, Summer 2020

- Process engineering for Social Security Administration
  Developed process metrics for the SSA's disability claims system. Created a Django analytics dashboard and visualization functions on the backend, created a REST API and endpoint documentation, implemented logging.

Undergraduate Research Experience

University of Texas at Austin, Undergraduate Research — Austin, TX

Human Signals Lab, Dr. Edison Thomaz — 2019–2020

- Predicting outcome of surgery patients
  Created machine learning classifiers for predicting surgical outcomes using Fitbit wearable device data from hip and knee surgery patients.

Biomaterials Lab, Dr. Elizabeth Cosgriff-Hernandez — 2018–2019

- Fabrication of a hydrogel dressing for chronic wound healing
  Developed a hydrogel wound dressing incorporated with active healing factors and wrote image processing programs to automate dead/alive cell counts and calculate porosity.

Tufts University, NSF Research Experience for Undergraduates (REU) — Cambridge, MA

Visual Analytics Lab, Dr. Remco Chang — Summer 2017

- Improve understanding of medical Bayesian-reasoning scenarios
  Studied human understanding of Bayesian-reasoning visualizations by different spatial ability of subjects and examined features such as text, plots, and interactivity.

Scholarships and Awards

- NSF Industry-University Cooperative Research Center (IUCRC): Personalized Pervasive Intelligence Center *Award for Most Impactful Research ($250)* — 2023
- CU Boulder Population Center Travel Grant *to attend ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) ($500)* — 2023
- Dean's Summer Research Fellowship, CU Boulder (*$6,000*) — 2021
- Teaching Assistant Award, CU Boulder (*$200*) — 2021
- Recognized as a CS Department Top Teaching Assistant, CU Boulder — 2020
- Early Career Professional Development Fellowship, CU Boulder (*$1,000*) — 2020
- Graduated with University Highest Honors, UT-Austin *for GPA>3.70 and top 10%* — 2020
- Finalist in Engineering Research Poster Competition, UT-Austin *Top 5 out of 200+ students* — 2019
- University Honors, UT-Austin *for GPA>3.50* — 2016–2020
- Engineering Honors Scholarship, UT-Austin *$40,000+ Merit-based scholarship* — 2016–2020
- National Center for Women in Information Technology (NCWIT) Aspiration Award — 2016

Grants

- NSF IUCRC Personalized Pervasive Intelligence Center Project Funding (*$75,000/year*) — 2023–Current
  Project: Graph-based Spatiotemporal Representation Learning for Long-Term Video Understanding
  Role: 50% contribution towards acquiring this funding with my advisor Morteza Karimzadeh.

Service and Leadership

- Student Volunteer at UbiComp, Cancún, Mexico
  (ACM International Joint Conference on Pervasive and Ubiquitous Computing) 2023
  20+ hours of volunteering for pre-conference and main conference.
- CS Department Peer Mentor, CU Boulder 2020–Current
  Mentored 3+ CS graduate students and 3+ undergraduate students applying to graduate school.
- NSF Engineering Research Center (ERC): Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) Institute Student Leadership Council, CU Boulder 2021–2022
  Volunteer on ASPIRE's Student Outreach Committee and Student Membership Committee
- e-NABLE Club, UT-Austin 2018–2019
  Co-founder, Treasurer, Officer for 3D printing customized prosthetics
- Theta Tau Professional Engineering Fraternity, UT-Austin 2017–2020
  Inner Guard (Officer), Recruiting Chair, Tutor, Peer Mentor

Teaching Experience

- **Data Mining** Teaching Assistant, CU Boulder Fall 2022
  Mentored students in class projects, course management, helped students in office hours.
- **Data Structures** Teaching Assistant, CU Boulder Fall 2021, Spring 2022
  Taught one weekly recitation (40+ students), course management, helped students in office hours, wrote and graded homework and exams.
- **Intro to Computer Science** Teaching Assistant, CU Boulder Fall 2020
  Taught three weekly recitations (30+ students), helped students in office hours, wrote and graded homework and exams.

Publications

1. A. Hoelzemann, **Julia L. Romero**, M. Bock, K. Van Laerhoven, and Q. Lv, "Hang-time HAR: A dataset for basketball activity recognition using wrist-worn inertial sensors", *Sensors*, vol. 23, no. 13, 2023.

2. **Julia L. Romero** and Q. Lv, "Global impact of COVID-19 pandemic on physical activity habits of competitive runners: An analysis of wearable device data", *International Journal of Environmental Research and Public Health*, vol. 19, no. 19, 2022.

3. B. Cadenas, J. Fita-Torró, M. Bermúdez-Cortés, I. Hernandez-Rodriguez, J. L. Fuster, M. E. Llinares, A. M. Galera, **Julia L. Romero**, S. Pérez-Montero, and C. Tornador, "L-ferritin: One gene, five diseases; from hereditary hyperferritinemia to hypoferritinemia—report of new cases", *Pharmaceuticals*, vol. 12, no. 1, p. 17, 2019.

Presentations

1. **Julia L. Romero**, Qin Lv, Morteza Karimzadeh, "Representation Learning on Geospatial Data for Encoding Urban Characteristics", *American Association of Geographers*, Denver, CO, March 2023.

2. **Julia L. Romero**, Ziyang Lan, Ronit Kar, Elizabeth Cosgriff-Hernandez, "Encapsulation of Gallium Maltolate-Loaded Microspheres within Hydrogel Foam Dressing for Improved Chronic Wound Healing", *Society for Biomaterials Conference*, Rice University, Houston, TX, May 2019.

Posters

1. **Julia L. Romero**, Qin Lv, Morteza Karimzadeh, "Representation Learning on Geospatial Data for Encoding Urban Characteristics", *NSF Personalized Pervasive Intelligence Center Poster Competition*, Boulder, CO, May 2023.

2. **Julia L. Romero**, Ziyang Lan, Ronit Kar, Elizabeth Cosgriff-Hernandez, "Encapsulation of Gallium Maltolate-Loaded Microspheres within Hydrogel Foam Dressing for Improved Chronic Wound Healing", *Undergraduate Engineering Research Competition*, University of Texas at Austin, Austin, TX, May 2019.

3. **Julia L. Romero**, Jared Chandler, Abby Mosca, Remco Chang, "InfoVis: Interactivity as a Tool to Improve Comprehension of Bayesian Probabilities", *Tufts University Research Symposium*, Tufts University, Cambridge, MA, August 2017.

Skills

- **Programming:** Python, Java, Matlab, C++, C, SQL; Experience with Go
- **Frameworks and Tools:** Pytorch, Keras, Google Cloud Platform, Django, Git, Solidworks; Experience with Spark, Kubernetes, Docker
- **Expertise:** Full-stack data analytics, Mobile/Wearable computing, Signal processing, Graph neural networks, Spatiotemporal and multimodal data methods
- **Related Coursework:** Deep Learning and Neural Networks, Applied Deep Learning, Machine Learning, Big Data Analytics, Data Mining, Datacenter Scale Computing, Advanced Software Development, Network Analysis, Network Systems

Personal Interests

- Competitive endurance sports: Running marathons, Ultramarathons, Mountain running, Gravel and road biking
- Fun Programming: writing Garmin watch apps, smart lightbulb-audio interfaces.