Andrew David Pearce

a3pearce@ucsd.edu • (925) 596-8960 • San Diego, CA • andrewdavidpearce.com • github.com/andr3wpearce

Research interests: wildfire fuel characterization from LiDAR and 3D point clouds; physically grounded state estimation and closed-loop measurement-model correction in high-consequence physical systems.

EDUCATION

Master of Science in Data Science • GPA: 3.83 **Sept 2025 – Expected Jun 2027**
University of California, San Diego *La Jolla, CA*

Bachelor of Science in Computer Science and Business **Aug 2021 – May 2024 (3 Years)**
Minor in Environmental Science
Lehigh University *Bethlehem, PA*

RESEARCH EXPERIENCE

Collaborating Researcher **Jun 2025 – Present**
UC Berkeley | Battles Lab, Dept. of Environmental Science, Policy & Management *Berkeley, CA*
PI: Dr. John Battles

- Developed and field-validated a method for estimating burn-pile volume and emissions from 3D reconstruction of mobile laser scans (MLS), with statistical calibration to physical quantities; against 15 hand-built piles, reduced RMSE from 58.0 kg (Wright's method) to 8.6 kg and bias from −23.1% to 0.1%.
- Collected MLS data across three field campaigns (Blodgett Forest Research Station, Tilden Regional Park, Russell Research Station).

Data Science Summer Institute (DSSI) Scholar **Jun 2026 – Sept 2026**
Lawrence Livermore National Laboratory *Livermore, CA*
PI: Dr. Martin DeBeer

- Developing a closed-loop workflow for volumetric additive manufacturing in which 3D reconstruction of each printed part drives parameter corrections for the next.
- Building an automated inspection workflow for CT-scanned lattices, from segmentation through defect reporting and FEA preparation.

Fire and Vegetation Modeling Intern **Mar 2026 – Present (part-time)**
Spatial Informatics Group *Pleasanton, CA*

- Developed an ember (firebrand) distribution model adapted from the Sardoy et al. transport framework for a wildfire modeling exercise with Underwriters Laboratories (UL).

Graduate Student Researcher **Feb 2026 – Present (part-time)**
UC San Diego/San Diego Supercomputer Center | Societal Computing and Innovation Lab *La Jolla, CA*
PI: Dr. İlkay Altıntaş

- Produced LiDAR-derived ground truth for the Wildfire Commons Shrubwise Data Challenge; mentored the winning team from result validation through an accepted AGU contribution.
- Independently verified the winning team's NAIP-imagery shrub-classification pipeline, confirming reported results and method quality against the challenge's evaluation criteria.

Co-Founder, Data Science Research Lead **Mar 2024 – Jun 2025**
Silvaye, LLC *Pleasanton, CA*

- Brought on as co-founder and computational lead by the two winners of a $100K NASA award to operationalize their funded concept; built it into a working analytics system and completed the NASA JPL incubator program.
- Architected the end-to-end pipeline automating LiDAR ingestion through fuel-load estimation; as industry partner, supervised the 5-person senior capstone team that built the IoT sensor hardware.

PUBLICATIONS & PRESENTATIONS

Olah A, **Pearce A***, Saah A*, Battles J. Manuscript on mobile LiDAR-based estimation of slash pile volume and emissions (B-PEAs). *In preparation.*

Floca M, [...], **Pearce A**, [...], Altintas I. "Advancing Operational Wildfire Spread Modeling through Reproducible Fire Behavior Model Implementations and Standardized AI-Ready Datasets." Submitted, IEEE BigData 2026, Workshop on Trustworthy AI Pipelines (WS#60).

Karabas S, Ersus B, **Pearce A**, Lee L, Ramonetti Vega P, Altintas I, Floca M, Stirm C. "Wildfire Commons Shrubwise Data Challenge: Outcomes from a designed machine learning pipeline to label shrubs." Abstract accepted, AGU Fall Meeting 2026, Wildfire Commons Session (NH056).

Olah A, **Pearce A* (Presenting Author)**, Saah A*, Battles J. "From Point Clouds to Physical Quantities: 3D Reconstruction for Burn-Pile Volume Estimation." Poster, CASIS 2026, Lawrence Livermore National Laboratory.
Asterisks (*) denote co-equal contribution as second authors.

HONORS & AWARDS

Winner, 3D Surface Fuels & Vegetation Modeling Prize Challenge **2026**
SERDP/ESTCP, Central Florida Tech Grove with NAWCTSD

Data Science Summer Institute Scholar, 1 of 39 selected nationally **2026**
Lawrence Livermore National Laboratory

SOFTWARE

B-PEAs: Burn Pile Emission Analytics • Public release pending manuscript submission
B-PEAs automates volume and emissions estimation from segmented MLS scans of slash piles.

TEACHING EXPERIENCE

Student Mentor/Grader **Jan 2023 – May 2023**
Lehigh University Department of Computer Science *Bethlehem, PA*

- Mentored two 5-person teams on full-stack delivery in Java, Flutter, Node, and Git. Reviewed architecture, testing, and CI practices to improve reliability.

TECHNICAL SKILLS

3D & Geospatial: LiDAR point-cloud processing (Open3D, PDAL, CloudComPy, MeshLab), SLAM capture workflows, ground filtering, surface reconstruction, QGIS, rasterio, GeoPandas
Languages: Python, C++, R, Java, SQL
ML & Scientific Python: PyTorch, scikit-learn, OpenCV, scikit-image, NumPy, Pandas, SciPy
Computing: Docker, Kubernetes, HPC and cluster workflows (Slurm, Flux)