Sida Shen

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EDUCATION

University of California, Davis 2019–2020, 2024–2025

Bachelor of Science in Sustainable Environmental Design

- Returned in Winter 2024 to complete remaining upper-division coursework.
- Coursework: Spatial analysis, GIS, urban and regional planning, environmental planning, sustainable design, and green building strategies.
- **Dean's Honors List**, College of Agricultural and Environmental Sciences.

PUBLICATIONS

- Chen, Z., **Shen, S**., Gao, R., & Wang, R. (2026). *Learning to Design with Ecology: An Inclusive Pedagogical Model for Ecological Planning Education.* CELA Learning, Research, and Practice (LLRP). Submitted.

RESEARCH

CELA 2026 Conference Paper: Ecological Planning and Design Education

- Designed a mixed-methods evaluation instrument to assess learning outcomes in ecological planning education, integrating quantitative measures with open-ended qualitative components.
- Conducting data preparation, statistical analysis, and thematic coding to examine student learning trajectories and pedagogical effectiveness.
- Synthesizing empirical findings into conceptual and analytical frameworks to support evidence-based evaluation.
- Writing and revising manuscript sections, integrating analytical results, and collaborating with faculty throughout the research and publication process.

California Watershed Biodiversity and Pollution Mapping (GIS & Spatial Analysis)

- Conducted statewide spatial analysis integrating native fish richness, watershed conditions, land use, and multi-source pollutant data to identify biodiversity hotspots and environmental vulnerability across California.
- Developed a Human Impact and Water Pollution Density framework overlaying heavy metals, nitrogen, and arsenic indicators with human development intensity to reveal cumulative risk patterns.
- Extended GIS-based analysis using a reproducible R workflow, synthesizing 8,000+ EPA water quality records to examine statistical distributions of nutrient concentrations via log-scale transformations.
- Applied multiscale spatial aggregation to integrate point-based monitoring data into county-level median pollution metrics to mitigate spatial sampling bias for regional environmental assessment.

Ecological Planning and Watershed Connectivity Design (Putah Creek Corridor)

- Conducted watershed-scale ecological modeling using focal species suitability, riparian habitat indicators, and corridor cost-distance metrics to diagnose fragmentation patterns.
- Integrated multi-layer spatial datasets to identify priority restoration zones and formulate connectivity strategies for riparian and terrestrial species.
- Translated ecological insights into a master plan framework linking regional watershed logic with site-scale interventions along the Winters reach.
- Produced analytical diagrams, site plans, and section studies demonstrating science-to-design reasoning for restoration, access, and habitat repair.

SKILLS

- Data & Research Methods: R, RStudio, Excel, statistical reasoning, data visualization, qualitative analysis, research writing, white paper development, policy memo drafting.
- Spatial & Analytical Tools: QGIS, ArcGIS Pro, spatial analysis, GIS mapping, land-use assessment, site analysis, spatial representation.
- Design & Visualization: AutoCAD, Adobe Photoshop, Illustrator, InDesign, Figma, diagramming, concept visualization, site planning graphics.
- Domain Knowledge: Environmental planning, environmental law, sustainable design strategies, community participation methods, conservation planning, green building materials, and site ecology.

EXPERIENCE

Digital Platform Operations & Data Analysis *Oct. 2020 – Dec. 2023*

- Worked in a digital platform environment supporting daily operations and content delivery.
- Assisted with tracking and organizing backend performance data, including engagement and activity metrics.
- Helped adjust workflows based on observed data patterns and operational needs.

PROJECT

UC Davis Arboretum Teaching Nursery - Spatial Ecology and Site Systems Analysis

Apr. 2025 – Jun. 2025

- Performed multi-scalar spatial and ecological systems analysis examining circulation networks, microclimate conditions, hydrological adjacency, and programmatic distribution.
- Diagnosed systemic constraints, including fragmented mobility, insufficient shade ecosystems, and weak cross-riparian connectivity affecting site performance.
- Developed a site systems framework positioning new program elements (greenhouse, amphitheater, waterway crossing) to improve ecological function, human comfort, and movement efficiency.
- Generated analytical diagrams and section studies demonstrating the relationship between spatial structure and environmental processes.

Regan District Housing Redevelopment — Sustainable Design Research

Jan. 2025 – Mar. 2025

- Conducted multiscale spatial, environmental, and microclimate analysis to diagnose performance and circulation inefficiencies in the existing housing district.
- Applied LEED and WELL frameworks to develop evidence-based sustainability and health performance strategies for architecture and site systems.
- Evaluated passive design opportunities through solar access, shading, and landscape climate regulation studies.
- Synthesized analytical findings into a sustainability-driven architectural design proposal demonstrating measurable improvements in energy, comfort, and well-being.

Grant Union High School Stadium District - Community Engagement and Site Redevelopment

Sep. 2024 – Dec. 2024

- Conducted community interviews and student workshops to identify safety, circulation, and social-space needs for the redevelopment area.
- Analyzed spatial patterns including microclimate exposure, vegetation structure, and movement networks to diagnose site constraints and opportunities.
- Developed a site framework introducing stormwater strategies, seasonal planting zones, and multi-functional public areas responsive to community priorities.
- Produced site plans, analytical diagrams, and perspective studies to communicate planning rationale and design intent.

Domes Housing District - Environmental Systems Framework and Modular Housing Prototype

Apr. 2024 – Jun. 2024

- Performed site-scale environmental systems modeling, evaluating microclimate exposure, solar geometry, ventilation flows, and access networks.
- Developed a modular container housing prototype to test passive thermal behavior, ventilation strategies, and low-carbon material performance.
- Integrated environmental simulations with architectural system design to propose an adaptable, climate-responsive residential model.