JAMES SCOTT CARDINAL

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Experienced project manager, research analyst, and social scientist with a 20+ years' record of technical innovation and team leadership. Specialized in exploratory and experimental analytics for complex and unstructured data. Expertise in geo-spatial pattern detection and latent feature analysis.

PROFESSIONAL EXPERIENCE

New York State Museum

Sr. Project Director, Museum Scientist — 2008-Present
Project Director, Education Program Assistant — 2004-2008
Assistant Project Director — 1999-2004

Regulatory compliance consultant for State and Federal management of cultural resources and heritage

- Designed and implemented research strategies to detect culturally significant resources, assessed potential project risks and impacts, and recommended mitigation strategies to inter-agency and public stakeholders
- Directed cross-functional research teams, coordinating the efforts of 5-25+ staff members and outside contractors
- Authored 50+ research reports documenting the identification, analysis, and mitigation for 20+ National Register of Historic Places archaeological sites
- Initiated analytics pipelines to combine spatial and tabular data for exploratory data analysis, descriptive analytics, and statistical inference that promoted empirically rigorous and data-driven recommendations and reporting
- Upgraded and normalized databases and created UI for integrating field data, collections records, and analytical features for projects using MS Access and VBA
- Pioneered the application of GIS in program area to identify spatial patterns in field data, now standard departmental procedure, which reduced analysis and reporting times by 80%
- Developed spatial auto-correlation method to locate significant locations, reducing subjectivity in delineating resources for risk mitigation or avoidance using Local Indicators of Spatial Association (LISA) as threshold
- Derived quantitative metrics in R for scoring resource integrity and significance using weighted co-expression network analysis, minimizing subjectivity in assessment and recommendations

CORE COMPETENCIES

Project Management	Data Science	Geo-Spatial Analysis	Statistical Inference
Team Leadership	Probability & Statistics	Social Networks Analysis	Regression Modeling
Research Design	Machine Learning	Graph Analytics	Cluster Analysis
Technical Communication	Data Visualization	Bayesian Statistics	NLP/NLU

EDUCATION

Master of Science in Analytics

2021 Georgia Institute of Technology, Atlanta, GA.

Master of Arts in Anthropology

2011 University at Albany (SUNY), Albany, NY.

ANALYTICS PROJECTS

Social Media Discourse Analysis

- Applied natural language processing, functional linguistics, and belief network analysis to evaluate psychometric indicators of discourse styles in political speech
- Analyzed collection of 15,000 tweets to learn patterns of sentiment and stance to identify distinct communities and potential instances of misinformation influences

COVID-19 Research Abstract Topic Modeling and Query

- Applied topic modeling and semantic network detection of COVID-19 research abstracts to create a searchable knowledge graph dashboard
- Analyzed 300,000 article abstracts related to COVID-19 research to classify networks of related research domains

SKILLS & TOOLS

- Programming: Python, R, MATLAB/Octave, SQL, VBA
- Tools: Linux, Jupyter, LaTeX, Git, ...
- Libraries: NumPy, SciPy, Pandas, Scikit-Learn, NLTK, SpaCy, Huggingface transformers, NetworkX, Tidyverse, Matplotlib, ggplot, ...
- Productivity: MS Office, Adobe Creative Suite, ESRI ArcMap, QGIS, RStudio

HONORS & AWARDS

- Executive Vice President for Research Award: 2020 Career, Research, and Innovation Development Conference (CRIDC), Georgia Institute of Technology, best graduate student poster presentation

RECENT PUBLICATIONS

"Use, Purpose, and Function: Letting the Artifacts Speak." Heritage 3(3), 2020: 587-605

- Defined empirical correlates of human material behavior, 3,000+ article views and 2,800+ downloads

"Sets, Graphs, and Things We Can See: A Formal Combinatorial Ontology for Empirical Intra-Site Analysis." Journal of Computer Applications in Archaeology 2(1), 2019: 56-78

- Applied set and graph theory to spatio-temporal distribution of artifacts, 900+ article views and 115+ downloads

RECENT CONFERENCE PAPERS

- "Objectives and Information: Mutual information, composite probabilities, and partitioning of archaeological sets." Computer Applications and Quantitative Methods in Archaeology (CAA) 48th international conference. Limassol, Cyprus (virtual). June 2021.
- "Point and Line to Hyperplane: Set and Graph Theory for Parsing Systemic Contexts and Assemblages." Computer Applications and Quantitative Methods in Archaeology (CAA) 47th international conference. Kraków, Poland. April 2019.
- "Matrix in the Network: Assemblage co-expression networks to unlock meaning in stratigraphic matrices." Computer Applications and Quantitative Methods in Archaeology (CAA) 46th international conference. Tübingen, Germany. March 2018.
- "Unscrambling the Egg: Quantitative, assemblage-based component consociation methods for densely mixed or disturbed contexts." Computer Applications and Quantitative Methods in Archaeology (CAA) 45th international conference. Atlanta, Georgia. April 2017.