

**University of California, Irvine
Statistics Seminar**

***Who Wrote It? A Hierarchical Mixture Model
for Forensic Handwriting Analysis***

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**4 p.m., Thursday, October 29, 2020
Join via Zoom: <https://uci.zoom.us/j/99193076115>**

When forensic examiners compare handwritten evidence they often focus on small details of writing. Likewise, our statistical approach to the comparison of such documents begins by decomposing writing into small meaningful connected pieces of ink, often corresponding to letters. We treat these small pieces of connected ink as graphical structures with nodes and edges and group them into types based on similarity of their structures. The frequency at which graph types appear in writing, along with measurements taken on the small graphs serve as data for a Bayesian hierarchical mixture model. Given a questioned document and a closed set of potential writers, we compute the posterior probability of writership for each person in the set. We assume that in terms of handwriting, the set of writers includes a mixture of cursive and block writers, and a latent variable in the model enables separation of both types. We implement this approach on a heterogeneous sample of writers and discuss results.